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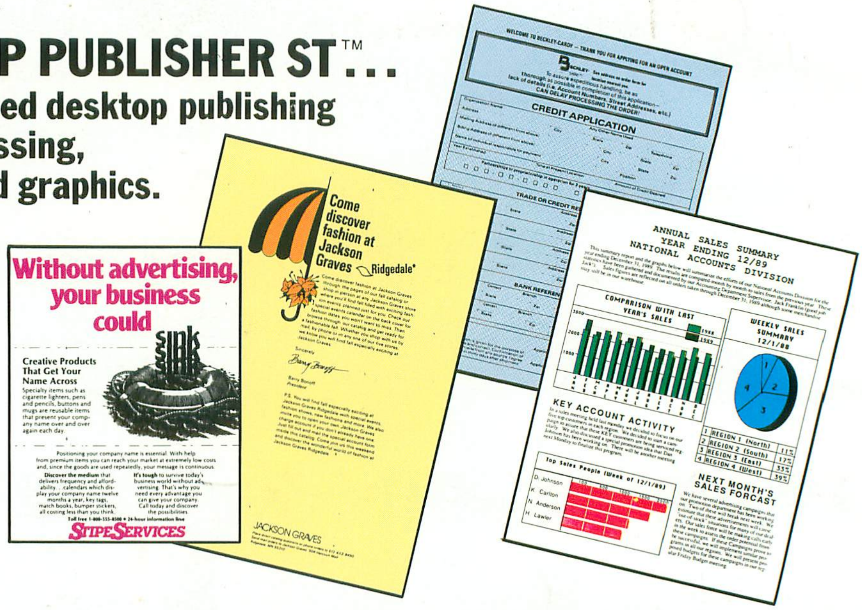

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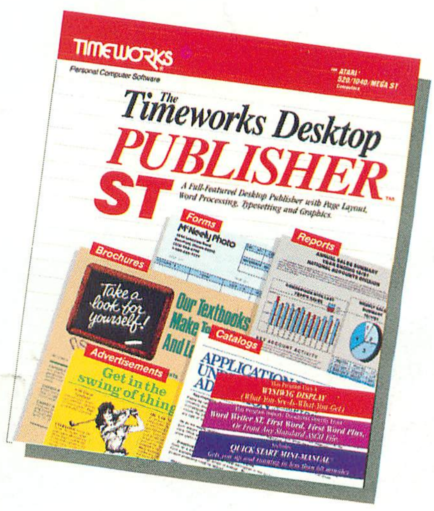

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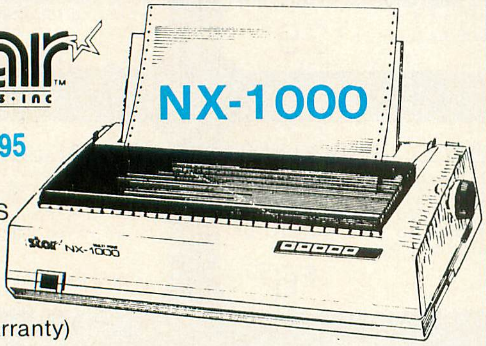

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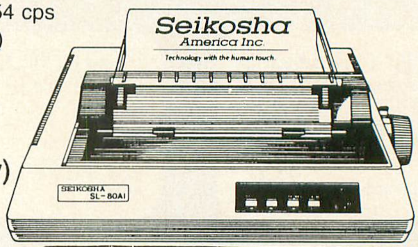

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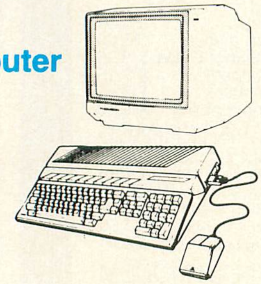

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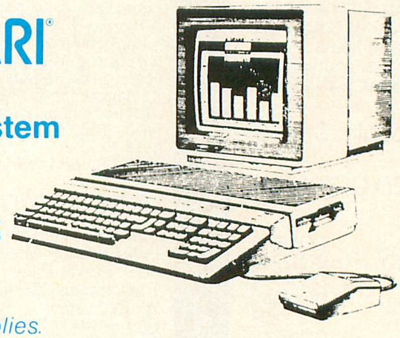

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FEATURES

JUNE 1988, VOL. 7, NO. 2

DEPARTMENTS

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Our Cover This Month:
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James Capparell

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Contributing Writers
Charles Cherry, Harvey Bernstein, Stephen Everman, Marian Lorenz, Bill Marquardt, Lt. Cmdr. Rich Moore, Allan Moose, Steve Panak, Jim Pierson-Perry, David Plotkin, Paul Pratt, Matthew Ratcliff, Stephen Roquemore, Jeffrey Summers MD, Rick Teverbaugh.

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David Hebenstreit, Director of Creative Services; Gregory Silva, Assistant Art Director; Jim Warner, Design/Production Assistant; Debra Stella, Ad Production Coordinator; Julianne Ososke, Collateral Printing Coordinator; Mary Rhomberg Peloquin, Contributing Artist; Terrific Graphics, Typesetting.

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Editorial submissions should include text and program listings on disk and paper. Submissions will be returned if stamped, self-addressed mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material.

Super 8-Bit Contest

Win ICD's 1Mb Multi I/O

Because of all the interest created by last year's Practical Program Contest and the fine type-in software it produced (**Antic**, November 1987), we're going to run an even bigger 8-bit contest in 1988. This time there are *two* grand prizes—ICD one-megabyte Multi I/O boards. The progamming categories are wide open and, for the first time, there's a grand prize for a *non-program* article!

The three runner-up programs and the three runner-up articles will each get a pair of prizes from ICD—an R-Time 8 clock/calendar cartridge and a SpartaDOS Construction Set disk.

Also, any entries accepted by **Antic** (including prizewinners) will be paid at our standard authors' rate, upon publication. In fact, all 8-bit programs accepted by **Antic** between January 1, 1988 and the contest deadline of August 1, 1988 will automatically be evaluated as potential contest winners. Winning programs and articles will be published in the December 1988 **Antic**.

ARTICLES CONTEST

The Feature Article Division of the 1988 **Antic** Contest is for: Best articles explaining the authors' real-life uses of their own **power-enhanced** Atari 8-bit computers. The authors must describe their own personal experiences and techniques using a non-standard 8-bit Atari that has—a memory upgrade of at least 256K, *or* a RAMdisk of at least 256K, *or* a hard disk of at least 10Mb, *or* other significant hardware modification.

Entries cannot be longer than 1,200 words and will be judged on the interest of the computer application as well as on quality of the writing. Either black & white photos or color slides (not color prints) can be submitted for publication along with an article, but photos are *not* required.

PROGRAMMING CONTEST

We are also looking for the best type-in programs for 8-bit Atari computer—any type of program. Practical applications, games, graphics or music software, powerful programming utilities, educational tools are all eligible. No program will be disqualified because of its category. Winning programs will be chosen for their interest, usefulness and imaginative originality, as well as for excellence and clean elegance of programming technique.

Please note and follow *every* technical rule given below. Some excellent programs had to be disqualified in last year's contest for secondary rule violations such as not being in renumberable code.

PROGRAM TECHNICAL RULES

• All entries must be original, unpublished works. Programs must be written in standard Atari BASIC (machine language subroutines are okay) and must RUN under DOS 2 or DOS 2.5 on all Atari computers having at least 48K memory (800, XL/XE). Programs must be self-contained and work without additional software, but compatibility with other pro-

grams is a plus.

• Maximum length for a SAVEd BASIC program entry (including any sub-listings) is 165 single-density disk sectors. Line numbers cannot be higher than 32000. No overlong program lines of more than 112 characters (after expansion of BASIC abbreviations). Program listings must be renumberable.

• Thorough error-trapping is required. And please do not include authors' copyright statements in your listing. Programs must be accompanied by an article that fully explains what the program does and provides a walk-through tutorial about how to operate it, as well as discussing the structure and techniques of the program. If your program uses a printer, your article should describe how to change the listing to work with different printer brands.

HOW TO ENTER

Programs must be submitted on DOS 2 or DOS 2.5 disks accompanied by a printout of the listing. Articles must also be submitted on disk as well as printed out. Text files must be readable by one of the following word processors—PaperClip, AtariWriter, First XLEnt, Word Magic, or Antic Writer.

Entries must be received no later than August 1, 1988. You can submit as many entries as you like. Entries will be returned *only* if the author provides a stamped, self-adressed envelope. Send your entries to: Contest '88, Antic Magazine, 544 Second Street, San Francisco, CA 94107.

Nat Friedland

Nat Friedland
Editor, **Antic**

LATE-BREAKING ATARI NEWS

ATARI SUES CHIP SUPPLIER: Atari Corp. filed suit in U.S. District Court against Micron Technology Inc. of Boise, Idaho, accusing Micron of illegally cancelling a telephone order for 3 million dynamic random-access memory (DRAM) chips, then offering an unspecified number of chips to Atari at a much higher price.

ATARI/SOVIET DEAL: Atari Corp. could be part of the first Soviet joint venture with a Western computer company. Early negotiations are reported by Alwin Stumpf, managing director of the Atari Corp. (Deutschland) GMBH. In 1987, Atari sold a record 100,000 computers to the Eastern bloc, including 4,600 8-bit units to East Germany and 10,500 to Czechoslovakia. ■

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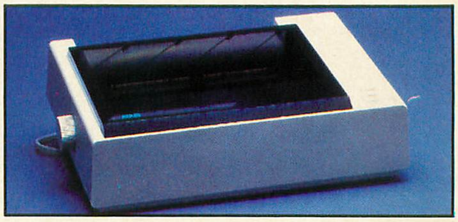

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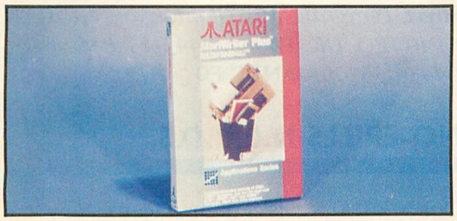

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B606

CIRCLE 004 ON READER SERVICE CARD

BALLPARK LISTING 2

Listing 2 for *Ballpark Figures*, which makes it easier to type the special characters in lines 1072-74, got left out of the April 1988 **Antic**.

The data for this listing is printed below. In order to use these data lines numbered 1000-1080, you must add them to the end of **Antic's** standard BASIC loader routine—which you'll find in this issue as **lines 60-250** of Listing 2 for the Game of the Month, *Escape From Hell*.

To merge both *Ballpark Figures* listings, follow the Listing 2 instructions in this issue's *Escape From Hell* article.

Don't type the TYPO II Codes!

```
JE 1000 DATA 247
MO 1010 DATA 0490480550500320830790820840
   36040049044054053041061034216104056233
   003133217104133204104133203
HG 1020 DATA 1041332151041332141041332101
   04133209162000104104157000001232228217
   208246056165209233002133209
DM 1030 DATA 1652102330001332100481081652
   09133211165210133212165204133206133034
   155049048055051032083079082
ZJ 1040 DATA 0840360400540540440490510480
   41061034208165203133205024101214133207
   165208101215133208160000185
FP 1050 DATA 0000011900020011342181900010
   01200200200132216168136177205209207240
   0121652182080004144016176046
VX 1060 DATA 1440441760102002022082341642
   16196217208210198034155049048055052032
   083079082084036040049051049
JY 1070 DATA 0440490560500410610342111692
   55197211208006166212240011198212165208
   133206165207024144172165213
NX 1080 DATA 2400041342132081480961342131
   60000177205170177207145205138145207200
   196214208241240203034155
```

COLLEEN MUSIC CREATOR

Colleen Music Creator, reviewed in ***Antic****, March 1988, is no longer distributed in the U.S. However, you can order Colleen directly from the overseas manufacturer. Send $29.95 to Colleen Ltd., 18 Bishop Street, Penygraig, Mid-Glamorgan, Wales CF40-1PQ, UK. Phone: 0443-434846 or 0443-435709.*—ANTIC ED

NO-FRILLS N.E.R.D.S.

Our N.E.R.D.S. Disks of map icons (New Products, **Antic**, February 1988) are now distributed through No Frills Software in both 8-bit (Print Shop) and ST (Print Master) formats. For information, send a stamped, self-addressed envelope to: No Frills Software, 800 E. 23rd Street, Kearney, NB 68847.

Don Loeffler
N.E.R.D.S. Software

continued on page 10

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CIRCLE 002 ON READER SERVICE CARD

8-Bit Product Reviews

Covox Voice Master Jr., SSI Shiloh, Panasonic KX-1091 Printer

COVOX VOICE MASTER JR.

The inexpensive ($39.95) Covox **Voice Master Junior** is a hardware addition to your 8-bit Atari that's not only an interesting diversion, but also a useful and educational addition to your programming tools. It lets you record and digitize any sound as well as "train" your computer to recognize certain words, which can then be responded to in a program.

The Voice Master Junior consists of a small box that plugs into a joystick port and a disk full of software. The box contains a microphone for recording sounds, either for playback or recognition. (*Covox is no longer making its regular $89.95 Voice Master for the Atari. The Junior model reviewed here has a few less features, at a savings of $50.*—ANTIC ED)

The most important piece of software is the BASIC wedge, which essentially adds new commands to Atari BASIC. When the Covox BASIC wedge is installed, you can use commands such as SPEAK, LEARN, RECOG and SPEED to make use of the Voice Master Junior.

Voice Master Junior can record as many as 64 words or phrases in memory, but since speech can be loaded from disk, the available vocabulary is virtually unlimited. To record a word, you type (in BASIC): LEARN 1. The computer then waits for you to start speaking and records until you stop, or until the section of memory for recording that word is exhausted.

To play a LEARNed phrase, type SPEAK. There are other commands for saving and loading speech files, clearing memory, turning off the screen (which improves speech reproduction) and varying the speed of playback. Further, any of these commands can be used in a BASIC program, subject to certain syntax constraints.

Using the command TRAIN, you can teach the computer to recognize 31 words. (Each word must be less than two seconds long.) Upon using the RECOG command, the number of the word that was recognized is placed into a PEEKable memory location. You can then respond to each TRAINed word in a different way, effectively giving voice control of the computer.

There are commands to narrow the choices and make recognition of the spoken word more reliable, and the TRAINed words are also saved when you save a speech file. Some sample programs in the well-written documentation and several programs on disk illustrate how to use TRAIN and RECOG in your own programs. Also included is a program for fine-tuning the digitized data to try to make the voice sound better.

If you couldn't include speech generated with Voice Master Junior in your own programs, then this device would merely be an interesting oddity. Fortunately, you can. Including a small subroutine (provided on the disk) in your program lets you load speech files and SPEAK words. You cannot LEARN new words or use the recognition features, but you couldn't without the hardware anyway. Creating a standalone program that speaks in your voice is a lot of fun and extraordinarily simple.

The sound reproduction quality is decent, considering that reproducing the human voice is difficult. The results tend to be a bit harsh and fuzzy, but not hard to understand. The documentation includes sections on memory usage and tips for improving performance. This is a well-thought-out product that is worth the money. Can you see the look on a friend's face when your Atari speaks with your voice, or responds to a spoken command?—DAVID PLOTKIN

$39.95, 48K disk. Covox, 675-D Conger Street, Eugene, Oregon 97402. (503) 342-1271.

CIRCLE **207** ON READER SERVICE CARD

PANASONIC KX-P1091i

The **Panasonic KX-P1091i, Model II** printer is a steady little performer for a 10-inch carriage, 9-pin dot-matrix printer. It has the usual feed switches and a slide switch for selecting draft quality, near letter quality (NLQ) courier, near print quality, bold proportional spacing and compressed print.

This compact printer (15 1/2 × 11 1/4 × 4 1/2 inches) prints 10, 12, 15, or 17 characters per inch (cpi), allows downloading of 40 custom characters, produces elongated, italic and bold text, as well as half-size sub-

continued on page 16

continued from page 8

BILLBOARD HELP

Because of Charles Cherry's review of Billboard (See "8-Bit Enhancements," **Antic**, February 1988.), I bought the program. In the review he mentioned that he changed the code to make the program work with a Gemini 10-X printer. I'd like to know what changes he made.

James Wind
Salt Lake City, UT

Charles Cherry writes, "As Chris Wareham says in his Billboard documentation, the printer codes are used in only three lines: 1020, 1600, and 2100. It's just a matter of changing those lines and inserting the codes for your printer. For the Gemini 10-X printer, I added some lines to make it easier. Make the changes in lines 1020, 1600 and 2100, then add lines 1601-1604 and 2101-2104." The new code follows:

```
1020 POKE 764,255:CLOSE #N4:OPEN #N4,N8,Z," P:":? #N4;"@A";CHR$(N8);"1M";CHR$(LMAR);:RETURN
1600 SCR=SCR+320/H:FOR I=N1 TO HT/N8
1601 IF MODE=0 THEN ? #N4;"K";CHR$(COLL);CHR$(COLH);PRNT$(N1,LIM):GOTO 1610
1602 IF MODE=1 THEN ? #N4;"L";CHR$(COLL);CHR$(COLH);PRNT$(N1,LIM):GOTO 1610
1603 IF MODE=3 THEN ? #N4;"z";CHR$(COLL);CHR$(COLH);PRNT$(N1,LIM):GOTO 1610
1604 IF MODE=6 THEN ? #N4;"y";CHR$(COLL);CHR$(COLH);PRNT$(N1,LIM):GOTO 1610
2100 FOR J=N1 TO W
2101 IF MODE=0 THEN ? #N4;"K";CHR$(COLL);CHR$(COLH);PRNT$(N1,LIM):GOTO 2110
2102 IF MODE=1 THEN ? #N4;"L";CHR$(COLL);CHR$(COLH);PRNT$(N1,LIM):GOTO 2110
2103 IF MODE=3 THEN ? #N4;"z";CHR$(COLL);CHR$(COLH);PRNT$(N1,LIM):GOTO 2110
2104 IF MODE=6 THEN ? #N4;"y";CHR$(COLL);CHR$(COLH);PRNT$(N1,LIM):GOTO 2110
```

DESIGNER LABELS FIXES

Designer Labels (**Antic**, April 1987) doesn't display the directory of pictures saved with Broderbund's Print Shop Companion, even though you can load a picture if you know the filename. To display the directory, change line 3040 to:

```
3040 FOR X=CO TO 96 STEP 32:IF B$(X+20,X+20)<>"X" AND B$(X+20,X+20)<>"x" THEN 3060
```

The above program line comes from *Iconverter* (**Antic**, December 1987).

Also, after each run of labels, the printer platen must be rolled back so that the next run will print in the vertical center of the labels. But the following line modifica-

tions take care of this—on Epson and Gemini printers:

```
2260 FOR I=C1 TO NLABELS:IF I=C1 THEN GOTO 2270
2262 ? #C2:? #C2:IF PEEK(53279)=C3 THEN POP:CLOSE #C2:RETURN
2310 IF P=-C1 THEN ? #C2:GOTO 2330
2320 ? #C2
```

These modifications delete some printer control codes. Turn your printer off and back on again before booting another program that uses the printer.

Phil Snider
Chattanooga, TN

VENDORS HELP ONLINE

Type GO ATARIVEN to get to the Atari Vendor Support Forum, a new SIG in the Atari section of CompuServe. As of late February, 1988, six vendors, ICD. Inc., Intersect Software, Michtron, Drafix, QMI and Regent Software have uploaded libraries full of short programs, patches, text files of tips, etc. Company representatives are also available to read your comments and answer your questions— ANTIC ED

BIORHYTHM FIX

*Three readers pointed out a mistake in **BASIC Biorhythms** (Antic, January 1988). In line 2232, change the GOTO statement from GOTO 2240 to GOTO 2234. Also, "February" is misspelled in line 4020.*

***Antic** thanks Rick Weissmann of Colorado Springs, Colorado; Dennis Leitch of Yakima, Washington and Gordon Haddrell of Summerland, British Columbia.*—ANTIC ED

Antic welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.

Send letters to: Antic I/O Board, 544 Second Street, San Francisco, CA 94107.

*New Products notices are compiled by the **Antic** staff from information provided by the products' manufacturers. Antic welcomes such submissions, but assumes no responsibility for the accuracy of these notices or the performance of the products listed.*

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(disk enhancement)
Innovative Concepts
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(disk drive cleaner)
Tech-Sa-Port
P.O. Box 5295
Pittsburgh, PA 15206
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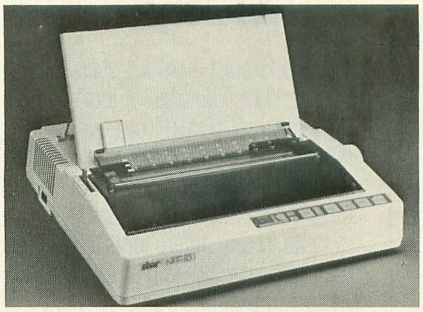
CIRCLE **222** ON READER SERVICE CARD

The wet portion of the **Floppiclene** wet/dry system cleaning disk loosens foreign particles, and the dry portion wipes them off. Floppiclene contains 20 100% disposable cleaning disks (so there's no recontamination of the head), plenty of cleaning solvent, a reusable disk envelope, two anti-static screen wipes and two lint-free wipes for drying off the monitor.



STAR NR-10

(dot-matrix printer)
Star Micronics America, Inc.
200 Park Avenue, New York, NY 10166
(212) 986-6770
(800) 537-8270
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CIRCLE **221** ON READER SERVICE CARD

How does 60 characters per second (cps) sound—in near letter quality? How about 240 cps in draft? That's the speed of the Star **NR-10** and the wider-carriage **NR-15** ($799), according to the manufacturer. These parallel printers require no DIP switch manipulation—all controls are on the front panel. Features include auto paper feed, tractor feed and forward or reverse feed, an expandable 12.6K print buffer.

PRINTPOWER

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Hi Tech Expressions
1700 Northwest 65th Avenue
Suite 9
Plantation, FL 33313
(800) 848-9273
(305) 584-6386 In Florida
$14.95, 64K disk
CIRCLE **223** ON READER SERVICE CARD

Print greeting cards, invitations and announcements in two-fold horizontal, two-fold vertical and tent card formats with **PrintPower** from the people who gave you AwardWare (reviewed in **Antic**, November 1987). PrintPower prints signs, posters, flyers, stationery, letterhead, memos, notepaper and banners, and the onscreen template lets you visualize your work as you create it. The program features six typefaces with seven variations each and three different type sizes; line-by-line editing; 40 different borders and 60 different graphic designs.

1050 DETECTIVE

(disk utility)
Del Com Services
803 Eisenhower Drive
Augusta, GA 30904
(404) 738-2139
Requires 48K, 1050 disk drive, BASIC Rev. A or C
$19.95
CIRCLE **218** ON READER SERVICE CARD

The **1050 Detective** lets you explore the Serial Input/Output area of Atari 8-bit computers and shows you how to control your 1050 drive—even one with modifications. Included programs are in BASIC, sometimes including machine language subroutines, and several type-in programs are included in the 29-page documentation.

CHILDHOOD SOFTWARE SURVEY

(resource list)
High/Scope Educational Research Foundation
600 N. River Street
Ypsilanti, MI 48198-2898
(313) 485-2000
$20
CIRCLE **220** ON READER SERVICE CARD

Yes, there is a significant amount of Atari 8-bit software listed in this book. **The 1988 Survey of Early Childhood Software** helps parents and teachers find just the right software for children aged 3 to 6. Nearly 300 comprehensive, practical descriptions rate each program on ease of use, educational value, instructional design, computer compatibility, skills required and amount of adult supervision needed. Titles are listed by computer brand name, content area and overall rating.

Return the favor. When you call a manufacturer or supplier about a product you've seen advertised or otherwise mentioned in ANTIC, please tell them so. This will help us to continue to bring you the latest information about products that will make your Atari computer an even more valuable investment in the future.
—ANTIC ED

Program By TONY BARNES

Escape From Hell!

Abandon all hope, ye who don't use TYPO II

Your programming sins have condemned you to eternal suffering! But maybe—just maybe—you can gain absolution and ascend through the heavenly gates. Escape from Hell! is a BASIC program that works on 8-bit Atari computers with at least 48K memory, disk or cassette.

"There must be some mistake," whimpered Myron. "I didn't deserve to be sent to Hell!" But his guilty thoughts nagged at him, "Is it because I wrote yet another game ripping off Lode Runner? Or could it be. . . because I never used TYPO II, found in every issue of the **Antic** Software Library?"

Disconsolate, Myron began to wail, "But I didn't do anything bad enough to be damned to eternal torment! Let me out!" However, his pleas fell on deaf horns. And he knew he must learn to program the **Antic** way in order to *Escape from Hell!*

Step into the cloven hooves of Myron the Damned and walk through the infernal flames of the lowest and most fiendish levels of Hades—reserved for those who never use TYPO II even after continually getting all sorts of avoidable program errors and blaming everything on **Antic**.

You've got a time-limit to race through each of the six levels of Hell and snatch up every single back issue of **Antic**. If you succeed, you go up to the next level. If you fail, you must overcome an extra death.

Oh, and did anybody mention the Devil? Hey, that kooky Satan isn't going to make things easy or fair for you. That's why he's the Devil. He's going to chase you till he catches you, and if you lose your four deaths, not only will you burn in Hell forever—you'll also be forced to listen to constant bragging from owners of Commodore computers.

HOW TO PLAY

Type in Listing 1, HELL.BAS, check it with TYPO II (if you don't want to end up like Myron the Damned) and SAVE a copy before you RUN it.

If you have trouble typing the special characters in lines 9022 and 10001-10009, don't type them in. Instead, type Listing 2, check it with TYPO II and SAVE a copy. When you RUN Listing 2, it creates these hard-to-type lines and stores them in a file called LINES.LST.

To merge the two programs, disk users LOAD "D:HELL.BAS" then ENTER "D:LINES.LST". Cassette users CLOAD Listing 1, then insert the separate cassette used for Listing 2 and ENTER "C:". Remember to SAVE the completed program before you RUN it.

After the title screen engulfs you in flame, press the joystick button to play Escape from Hell! Myron is the little green guy, and Satan's the little red one waving his pitchfork. Move around with the joystick, grabbing every **Antic** "A" logo you can. If you get them all without being dusted by the Devil, you'll go up to the next level.

You get between five and ten points for each back issue of **Antic** you grab, but the Devil decides how many points you need—it's different each time, anything between 2,500 to 5,000 points. In fact, if Satan so decrees, you might have to go through more than one cycle of the six screens.

WATCH OUT

Here are some hazards on your Escape From Hell:

If you step in a fire pit, the unbelievable pain and shock will send you skyrocketing—but that's the only way to move upward within a screen. No pain, no gain.

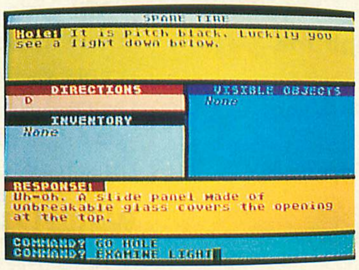
Watch out for shaky ground. You can only cross it once—the next time you try, it'll fall out from under you

continued on page 15

Grand Underground Text Adventure

New challenge for Zork fans

By STEVEN LEE



Fans of large-scale text adventures will find a challenging quest in this month's Super Disk Bonus—Antic's Grand Underground Text Adventure. If you're homesick for the mysterious Zork type of realm, here's your chance to go back below ground and attempt to survive a whole menagerie of monsters—gnomes, elves, dwarves, trolls, ogres, vampires, wizards, giant rats. . .

Antic's Grand Underground Text Adventure is written in fast, powerful MAC/65 machine language and boasts multiple windows that make playing the game a lot more convenient. The BASIC runtime translation is over 160 sectors long, which would mean you'd be typing page after page of nothing but data statement numerals if we printed the listing. MAC/65 programmers should be able to find the full source code for the Grand Underground Text Adventure in May on the ANTIC ONLINE Software Shelf.

The programmer of Antic's Grand Underground Text is Steven Lee of Sacramento, California who wrote the ambitious *UltraFont* character set editor in our August 1986 issue. He is a computer engineering major at California Polytechnic Institute, San Luis Obispo. The story layout is by his sister Wai Ping Lee, a business/economics major at U.C. Berkeley and an avid adventure gamer.

Here's how the adventure (originally titled Spare Tire) begins: You're driving along dark, narrow roads when suddenly a little dog appears out of nowhere. You swerve to avoid the hitting the pup, only to skid into a cavernous hole. Fortunately you are not hurt and the only damage seems to be a very flat tire. Looking in the trunk, you discover that the spare tire is missing. Suddenly you hear chattering noises from below. Perhaps someone down there can help. It looks as if you have only one choice, to investigate and attempt to find a spare tire.

This month's Antic Disk also has a help file for the Grand Underground Text Adventure including a list of acceptable command verbs. To read the Help file or obtain a printout, select choice 5, HELP.BAS, from the Side A menu.

Your May 1988 Antic Disk—featuring the Grand Underground Text Adventure as well as every type-in program from this issue—will be shipped to you within 24 hours after receiving your order. Just phone Toll-Free to the Antic Disk Desk at (800) 234-7001. The monthly disk is only $5.95 (plus $2 for shipping and handling) on your Visa or MasterCard. Or mail a $5.95 check (plus $2 shipping and handling) to Antic Disk Desk, 544 Second Street, San Francisco, CA 94107.

Programmers: Antic wants to see your most ambitious programs, even those too large or complex for printing as a type-in listing. High-quality programs in any language that has a runtime version are now eligible for consideration as a Super Disk Bonus. ■

New Super Bonus Text Adventure • only $5.95 on the Antic Monthly Disk!

*Part of the **Antic** Escape From Hell! re-design team at work: Seated, Charles Jackson. Standing (from left), Scot Tumlin, Jon Bell, Carolyn Cushman.*

Mary Rhomberg Peloquin

ESCAPE FROM HELL!
continued from page 13

and send you plummeting. The Devil, however, can go wherever he wants, because it's his turf.

By the way, you can use your joystick to "fall" horizontally—the laws of physics are a bit hinky in Hell.

When you reach higher levels, watch out for the arrows. You can't travel against the direction of an arrow. But the Devil can, you betcha. If you wanted death to be fair, you never would have wound up in Hell.

There's also a suicide mode. On any game screen if you're in an impossible situation, press the joystick button. Sure, you'll lose a death, but at least you can start over.

After you have grabbed the Satanically randomized number of **Antic** logos, you'll be absolved and the Hallelujah Chorus will accompany your ascent into Heaven.

CHALLENGE FROM HELL

The **Antic** staff hereby apologizes to author Tony Barnes, who will be very surprised to see what became of his game here. We originally accepted the game because it ran smoothly, was well-programmed and had some interesting variations at the higher levels. But when we actually sat down to prepare it for publication in this issue, a little jazzing up seemed to be needed.

As submitted, the game was titled "Dynamite Dan" and it had a little guy running through a dungeon maze while picking up dynamite sticks and jumping on trampolines to escape from a robot that searched in random patterns. Well-done, but nothing that hadn't been seen before.

So **Antic** Technical Editor Charles Jackson started idly changing POKE values to get a more ominous background color. Looking at the new hellish red that eventually wound up in the infernal flames and on the title screen, Editor Nat Friedland commented, "Escape From Hell! The little guy is condemned for his programming sins."

Ultimately the whole **Antic** staff became obsessed by this conversion project. Charles Jackson spent more time overseeing the program changes than we'd like to admit to Publisher James Capparell. Assistant Editor Gregg Pearlman wrote the new game scenario. Editorial Assistant Carolyn Cushman helped work on the new sound and graphics. The idea for the final ascension came from Ad Production Coordinator Katie Murphy.

In fact, we had so much fun putting changes into Barnes' clean, sturdy program that **Antic** challenges *you* to come up with a new adaptation which is totally different from Escape From Hell! Keep the same overall program structure, but change the character set, the look of the screen, the storyline, etc.

FINAL JUDGMENT

Antic will judge the entries and all best adventures will appear as a bonus on the November 1988 Antic Disk. Winners will receive a copy of that disk issue. The Grand Prize winner also gets any single Antic Software product from The Catalog.

Mail your programs and story textfiles on a standard, single density disk that's compatible wth DOS 2. Include a printed copy of your new scenario. Send entries to: Challenge From Hell, Antic Magazine, 544 Second Street, San Francisco, CA 94107. All entries must be received by July 5, 1988.

On your disk label, please *neatly* print: Challenge From Hell, your name, address, phone number and the filename(s) on that disk. Contest entries become the property of Antic Publishing, Inc., and the disks cannot be returned. ■

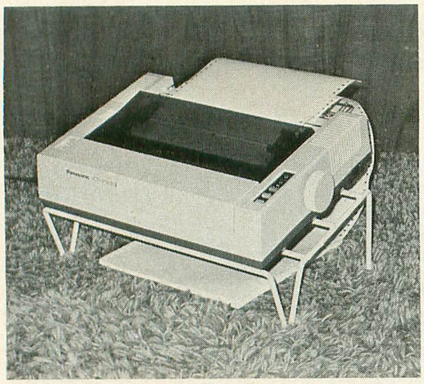
*Tony Barnes is a San Franciscan making his first appearance in **Antic**. We hope he's not too upset about what happened to his program.*

FOR MORE ARTICLES LIKE THIS, CIRCLE **203** ON READER SERVICE CARD. *Listing on page 69*

continued from page 14

scripts and superscripts. The 1091i emulates the Epson RX-80 or the IBM Proprinter. It has seven bit-image graphics modes (ranging from 60 dots per inch to 240), a two-year warranty and a retail list price of $299.

The ribbon cartridge simply pops in. It has a hole you can poke to darken the ribbon after it becomes light. The manual provides all the technical information you need for customizing printer drivers, designing character sets or writing screen dumps—even beginners can experiment with the sample BASIC programs provided. The KX-P1091i readily works with Atari 8-bit computers if you supply a parallel interface (such as the P:R: Connection or Atari 850) and set DIP switch SW3 (line feed switch) to ON.



The KX-P1091i does quite well in terms of speed, print quality and noise level. This Panasonic took only 19 seconds to print out a double-spaced page in pica draft mode and 61 seconds in NLQ mode.

The draft print passes the practical test—it is quite readable in all pitches, from pica to condensed. While the NLQ printing won't pass for daisy-wheel printing, it's good.

The KX-P1091i does have a few drawbacks. The parallel port is located in the rear, encouraging fanfold paper to snag on the edge of the ribbon cable. And the design of the tractor is too simple. The paper pinholes hook on only the front of the tractor instead of both front and the back. If the paper is not precisely positioned, it tends to pull off the tractor. This sometimes happens with even more expensive printers, but the simplistic construction of this tractor compounds the problem.

The cover must be snapped off or on. It is bothersome to line up the paper since you cannot easily see its top edge through the smoke-tinted lid. But none of the printer's faults are fatal. The Panasonic KX-P1091i Model II packs a lot of punch for the price.—JARED LUM

$299. Panasonic Corp., 2 Panasonic Way, Seacaucus, NJ 07094. (800) 222-0584.
CIRCLE **210** ON READER SERVICE CARD

SHILOH

Shiloh: Grant's Trial in the West is SSI's new Civil War game for one, two or no human players and it requires meticulous attention to detail. The costly two-day struggle was characterized more by inexperience and incompetence than by skill and courage. And in the game, a talented Confederate commander can easily "change history."

Shiloh's three levels of complexity each have multiple options for difficulty, visibility, reinforcements, ammunition, unit efficiency and scenario length. Both commanders have infantry, artillery and cavalry units. The North also has gunboats for fire support.

At the Intermediate level, forces must be kept organized to avoid penalties from poor command control. Brigades *must* be broken down into more effective "demi-brigades," and units can be placed in different formations for more efficient movement or combat. The Advanced game limits ammunition, but lets you fortify positions.

The graphics are fairly good. Shiloh can be played on either a large-scale "strategic" map or a more detailed tactical map of 200-yard squares in a 30×30 grid.

The fine manual contains tutorials on movement and information gathering, and SSI provides a battlefield map card with game data on the back. It should have contained a list of commands, since the "online command help" doesn't help much. The Order of Battle listings in the manual *must* be kept at hand during the game to maintain command control.

Shiloh plays fairly well at the Basic level, and there's also a nice joystick option here (though you can't move diagonally). You *cannot* play the Intermediate and Advanced levels with a joystick—unless you install your own driver (*SSI Joystick Commander,* **Antic**, January 1988).

At the more complex levels, the addition of greater detail slows Shiloh down. Much more time must be spent planning the operations and combat phases of each turn. When you're done with your move, the computer takes several minutes to make its moves.

If you have plenty of time, Shiloh is challenging and entertaining. Keeping your forces organized will bring far greater success than the historical commanders had.—RICH MOORE

$39.95, 48K Disk. Strategic Simulations, Inc., 1046 N. Rengstorff Avenue, Mountain View, CA 94043. (415) 964-1353.
CIRCLE **209** ON READER SERVICE CARD

BATTY BUILDERS

Thunder Mountain's **Batty Builders** is supposed to be designed for ages 8 and up—up to about 13, I'd say. A joystick-controlled little stick figure runs across the bottom of the screen, trying to catch one of four different kinds of falling blocks and then tossing them into the right row so that all the blocks are aligned at the end.

You get points for catching the blocks and even more for putting them in the proper rows. You also get bored real quick from the simplicity of the challenge and the 1970s feel of the graphics. To Thunder Mountain's credit, they do give an exact idea of what the game sceen looks like on the package. So what you see is what you get, but what you get won't provide much entertainment for anyone older than 13.—RICK TEVERBAUGH ■

$9.95. Thunder Mountain, P.O. Box 1167, Northbrook, IL 60065-1167. (800) 221-9884.
CIRCLE **211** ON READER SERVICE CARD

By HEATH LAWRENCE

Sleuth

Challenging memory game, no reading required

Faces, houses, telephones, musical notes, helicopters and spacemen are only a few of the pictures that kids can match in this 342-square memory game modeled after TV's famed "Concentration." The BASIC program works with all Atari 8-bit computers of any memory size, disk or cassette.

In this brain-challenging game, two players compete to be first to match 10 pairs of little pictures hidden behind 19 rows and 18 columns of blank blocks. That's a total of 342 possible hiding places—and the pictures are randomly scattered into different positions every time you play the game. So you'll need to focus all your memory skills.

Unlike the other variations of TV's "Concentration" that we have published in recent months—*BASIC Concentration ST* (April 1988) and 8-bit *Recall* (May 1988)—Sleuth does NOT require players to guess words after finding the image pairs. Therefore, Sleuth is a particularly suitable challenge for families with kids who don't read yet.

GETTING STARTED

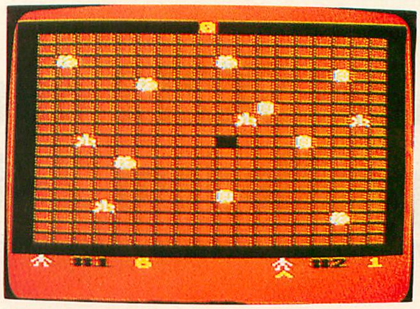
Type in Listing 1, SLEUTH.BAS, check it with TYPO II and SAVE a copy before you RUN it. This two-player program works with either two joysticks (each player uses their own), or with one joystick shared by both players in turn.

When RUN, Sleuth asks you whether you're using one joystick or two. Next, Sleuth draws a black-bordered 18 X 19 grid and a little "man" at both bottom corners of the screen.

Each player then takes turns moving the flashing cursor from the center of the screen to any other square in the grid. Pressing the joystick button reveals a yellow icon. You then move to another square and press the button again.

If you uncovered a pair of icons, they'll both turn green and remain onscreen. If the two icons *don't* match, there's an onscreeen countdown of 10 seconds and you must try to memorize the icon locations before they're covered up again.

A match is worth one point and will make your little man jump joyfully at the bottom of the screen. After one



player gets 10 points and wins, a star appears below the winner's jumping man. Press [START] for another game.

HINTS

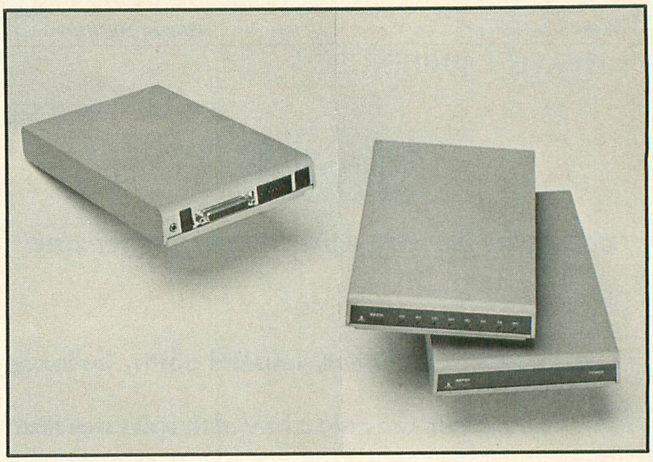
The key to winning at Sleuth is to remember the positions of shapes that were revealed a few turns previously. It's much easier to remember icon locations if you use points of reference. For instance, try exposing icons in the corners or beside others that were matched previously. Pay particular attention to the locations during the 10-second countdown—you can bet that your opponent will.

To change the cursor speed, change the variable D in line 170 ("FOR D=1 TO 20:NEXT D"). To change the countdown time, do the same thing in line 60.

continued on page 26

Atari SX212 and SupraModem 2400

Two breakthrough values in online hardware



Mary Rhomberg Peloquin

ATARI SX212 MODEM
Atari Corp.
1196 Borregas Avenue
Sunnyvale, CA 94086
(408) 745-2000
For Atari 8-bit or ST
$99.95
CIRCLE 243 ON READER SERVICE CARD

Reviewed By CHARLES JACKSON

The **SX212** ($99.95) is Atari's first 300/1200 baud, Hayes-compatible direct-connect modem. It will work with your ST *or* your Atari 8-bit computer—without any additional interface devices. All in all, the SX212 is a safe, workable modem that offers Atari users an easy way to move up to 1200 baud online speed at the most affordable price on the market.

Best of all, the SX212 *works* fine! During hours of online testing at **Antic**, we did not have any problems with the SX212 power supply, a weak point of the Atari 1030 modem. Nor did we find any bare wire-tips dangling inside the case, as has been a worry to Atari XM301 modem owners (although it remains unclear if any equipment damage can be blamed on this threat).

The SX212 has a speaker, permitting you to hear busy signals, carrier tones and wrong numbers. If you've seen Atari's XEP80 eighty-column module (**Antic**, July 1987), you've already seen the SX212. Both were designed to use the same case. (This may explain why the silent XEP-80 has speaker brackets and a hole for a volume control. It also has recesses for eight modem status lights).

CONNECTING TO YOUR 8-BIT

Eight-bit owners have the option of connecting the SX212 in one of two ways. If you own an Atari 850 Interface or a P:R: Connection, you can connect it to your SX212 with a standard modem cable—and the SX212 will act like a Hayes modem. The Antic Technical Staff has successfully tested the SX212 with HomeTerm, BackTalk and 850 Express software.

If you don't own an 850 or P:R: Connection, you can connect the SX212 directly to your Atari "daisy-chain" with a regular Atari SIO cable—the same type of cable that connects your disk drive to your Atari. Unfortunately, the previously mentioned programs will not work with an SX212 connected this way.

Presently there are only a handful of modem programs which support the SX212 without an 850-compatible interface. Most of these are Public Domain AMODEM terminal programs that have been altered to work with the SX212. There are also public domain "patch" programs which will similarly modify commercial online software such as HomeTerm. Check your favorite BBS and CompuServe's SIG * Atari for the latest patches.

Although the SX212 was first sold without software, future releases of the modem are to include the SX Express! program, the newest member of Keith Ledbetter's popular family of online software. An Atari spokesman says that as soon as their packaging contractor delivers the goods, SX Express! disks will be on sale along with an SIO cable for about $19.95.

SX FOR ST

Your SX212 will also work with your ST. No special cables or adapters are necessary—just use a standard modem cable and plug it into the ST's modem port.

On the ST, the SX212 can be used with any terminal program which supports a Hayes-compatible modem. Using the ST, we successfully tested the SX212 with Flash and several types of VT-52 emulators. Finally, we used the SX212 and FoReM-ST software (Comnet Systems) to create and control a BBS.

FINAL THOUGHTS

Atari's SX212 modem appears almost suspiciously competent. The $99.95 SX212 uploads, downloads and runs a BBS as efficiently as **Antic's** Hayes Smartmodem 1200—which sold for $599!

But although the SX212 costs only a fraction of the Hayes Smartmodem, it is a bit more difficult to live with. The SX212 speaker volume control is located deep within the modem. You need a long, thin screwdriver to adjust it.

The status lights, which let you know what the modem is up to, are dim and difficult to see. Your eyes must be perfectly level with the modem to see *any* lights.

The SX212 only has one SIO port, so it must be placed at the far end of your chain of peripherals. Because of this limitation, you can't use the SX212 with any other single-port peripheral, such as a program recorder.

Documentation for the SX212 is adequate for a telecommunications novice, but there is very little for the serious programmer, and there is no documentation for the SX212's handler. The manual is a 51-page guide to installing the SX212 and using its command set.

Still, despite any imperfections, at only $99.95 the SX212 is an unbeatable value for any Atari computer owner. ■

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Supra Corp.
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(503) 967-9081 (technical support)
$179.95
$199.95 with cables and software
CIRCLE **205** ON READER SERVICE CARD

Reviewed by GREGG PEARLMAN

The **SupraModem 2400** direct-connect 300/1200/2400 baud modem has now been used extensively at **Antic** and we haven't had any trouble with this hardware—except on 2400 baud uploads and downloads, which can probably be blamed on the telephone line noise you'll inevitably encounter at 2400 baud.

The SupraModem 2400 is one inch high, 4 5/8 inches wide and 6 1/2 inches long. It can be stacked easily. On the back of the SupraModem, from left to right, you'll find a nine-volt power jack, a female RS-232C serial port, a "line" socket for the provided telephone cable and a "phone" socket for your telephone.

The SupraModem 2400 comes with a 64-page manual that extensively covers the controls, commands, configurations, S registers, auto-dialing and auto-answering, diagnostic tests, result codes, FCC rules and more.

If you're running a bulletin board system, you'll want to know that the SupraModem 2400 automatically answers calls and hangs up afterward, and you can change the baud rate through software. The modem comes configured for automatic tone dialing, but it can also be set for pulse auto-dialing.

According to Supra Corp, the SupraModem 2400 is completely Hayes-compatible. It has a speaker with three volume settings—loud, Louder and PAINFUL! Unfortunately this is controlled through software, not with a volume knob. And if you put a pillow over the modem, you won't be able to see the front panel lights to tell what's going on.

The eight front lights are:
HS High Speed (2400 baud)
AA Auto-Answer mode
CD Carrier Detect
OH Off Hook
RD Receive Data
SD Send Data
TR Terminal Ready
MR Modem Ready

Long, continuous use doesn't slow down the modem or cause other troubles in transmission and reception. I accidentally left the power on over the weekend and the SupraModem 2400 showed no signs of resulting wear.

My data line at Antic Publishing is shared with the editorial staff of Model Shopper Magazine, so obviously we can't both go online at the same time. However, if the SupraModem is on when Model Shopper goes online, through the Supra's speaker I hear the dial tone and the number being dialed. I never noticed this on the Avatex 1200 modem I previously used.

In the Atari areas of CompuServe and GEnie, opinions about the SupraModem 2400 thus far are mixed. Users either *really* like it or *really* don't. Many don't like the four-level volume control (three ons and an off). A few have had trouble running bulletin board systems, but we

continued on page 26

Education

By PAUL WAXMAN

Big Bird, Ernie, the Tink Tonks — Only $9.95 Each

Ernie, Big Bird, Grover and television's other "Sesame Street" characters have been making learning enjoyable and exciting for millions of children for more than a decade. Hi Tech Expressions bought the rights to the Sesame Street software series, originally published by CBS Software, and has re-released the programs at a fraction of their original cost.

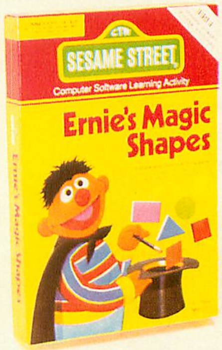
As if the new price—$9.95 each—isn't enough of an enticement, each package also includes a Sesame Street Growth Chart, a play manual that includes suggestions to help parents use the programs more effectively and an offer to receive a $2 graphics disk for either PartyWare or AwardWare, or a sampler pack of their printer paper. Even if the programs were only fair, they and the extras would be well worth the money. But "fair" is not what these programs are. They're great—for children aged 3 to 6!

BIG BIRD'S SPECIAL DELIVERY

Big Bird and Little Bird must deliver a package containing an object from one of nine different categories: Clothes, Sports, Plants, Travel, Food, Animals, Kitchen Things, Buildings and Musical Instruments. **Big Bird's Special Delivery** has four possible destinations, each containing one item from four of the categories.

In Same Game, one of the items exactly matches the item to be delivered. In Find the Right Kind Game, one of the four is from the same category as the one Little Bird is holding. Since there are nine categories with six to eight items in each, the game can be played several times without much repetition.

Ability to match shapes (Game 1) and categorize (Game 2) are important first steps in developing good reading and math skills. This program helps reinforce those skills in a positive and enjoyable way. However, it would be more effective if it weren't for a few problems. The graphics showing the items to be matched aren't all clearly recognizable. In fact, I had to look at the instruction booklet, which contains a list of all the items, to make sure what a couple of them probably were. Also, the children to whom I showed this program liked it at first but became bored fairly quickly.



ERNIE'S MAGIC SHAPES

With a wave of his magic wand, Ernie the Magician makes a shape float over his head. Another wave, and a second shape appears on a table nearby. The child now and decides whether or not the two shapes match. If so, and the child agrees, Ernie nods and the two shapes float together before disappearing. If not, Ernie waves his wand, and a new shape appears on the table.

Ernie's Magic Shapes has six levels of play. At the lower levels, the child compares one shape to another or the colors of two similar shapes. Levels four and five require greater visual discrimination since the target object is made up of several shapes and each one has to be matched individually. At the highest level, there is a complex mixture of both shapes and colors.

The program is well designed, with neither the animation nor the program design becoming more important than the skills being developed. The shapes are clear and easily recognizable. Because of the increasing difficulty of the levels, the program will continue to challenge and teach your child as your child's capabilities increase—the program will grow with your child.

ASTRO-GROVER

In **Astro-Grover**, the Zips have landed from the planet Zap. Your child and Grover, that friendly blue furry mon-

ster, will help the Zips build beautiful cities and then help them get home. While helping Grover, your child also helps himself review such introductory math skills as counting, addition, subtraction and recognizing number patterns.

There are five activities of increasing difficulty in Astro-Grover. Level one gives your child practice in counting. With each successful count, another building is added to a colorful city. Level two gives a different sort of practice in counting. Adding and subtracting skills are practiced in levels three and four, while in level five the child must determine which number combinations will add up to the number on the space ship.

The graphics, music and educational goals of each level, and the stylish way the software is put together, make Astro-Grover a beautiful and educationally sound program. Even after the skills are mastered, chances are your child will still enjoy reviewing them with Astro-Grover.

$9.95 each, 48K disk. Hi Tech Expressions, 1700 N.W. 65th Avenue, Suite 9, Plantation, FL 33313. (800) 848-9273. In Florida, (305) 584-6386.

CIRCLE **213** ON READER SERVICE CARD

TINK TONKS SUBTRACTION

Another welcome new line of $9.95 educational software reissues comes from Thunder Mountain, a subsidiary of Mindscape.

From Mercer Mayer's classic book series comes **Subtraction with the Tink Tonks**. This software uses the appeal of the fairgrounds to entice children aged 4 to 8 to enter the various tents and put their subtraction skills to the test.

The opening menu offers two choices: Subtraction Fair and Play a Game. Each has three skill levels. There is a maximum of five subtraction activities and two games. Just as at a real fair, you can spend all your "money" at one or two booths doing the same activities several times or you can try them all. Beware: there are a couple of "sucker" booths.

Generally, the children with whom I tried this program had a lot of fun. The graphics and music are appealing and set the mood for fun at a fair. The subtraction examples are presented in very entertaining ways, with each tent having a particular style of presentation. As a change of pace and after the child has won enough Beepers, he or she can enter the Arcade for a test of memory.

Some of the children had difficulty controlling Tonker, the cute little robot who is the child's computerized alter ego. But eventually they all got the hang of it. Also, I wish there were more levels. I would like to use this program with my older students.

RUN FOR THE MONEY

Despite minor irritations, **Run For The Money** is one of the best economic simulations I've ever seen for children and adults. The premise of this two-player game is that two rocket ships needing repairs have landed on the planet Simian. You and your opponent race to buy raw materials needed to manufacture synanas, which you then try to sell to the natives. With your profits, you can repair your rocket ship, leave Simian and win the game.

To accomplish that goal, you must make decisions that take into account such interrelated factors as the three grades of raw material available, bargaining with suppliers and the unpredictable reaction of the planetary natives to the quality of your product and the your price. With your profits, you participate in an auction to buy the parts you need for your ship's repairs.

You plan your business strategy using a modified spreadsheet and are rated by the natives on how well you meet your projected goals. This rating can influence their decision to buy from you or your opponent. Other features include profit graphs, the Simian Vine newspaper and the development of an advertising campaign.

There are a couple of minor problems with the program. When it loaded, there was some screen flickering. Pressing [SELECT] changes the level of play at the beginning of the game, but it was difficult to get the computer to stop on the level I wanted. The tutorial, when I finally got it running, was great.

SONGWRITER

Sometimes I think we can be too sophisticated. After having worked with Atari's four voices, I was disappointed to find that Thunder Mountain's **Songwriter** uses only one voice. How can you make music with only one voice? No chords or counter-melodies—not even a simulated rhythm background.

And then I played with it and had a lot of fun. The program represents the music as a roll in a player piano. The screen shows a two-and-a-half octave spread of what looks like a modified piano keyboard. You can decide the beginning note of that spread. You choose a note to be a part of the music by moving a white marker and placing it with the spacebar. The size of the marker changes according to the duration of the note. You can design your own musical scale and choose any one of a number of note durations including such non-standard notes as 24ths and 48ths.

You can also create your own keyboard commands (called "musical ideas") to automatically repeat patterns of notes. And included on the disk is a library of songs that show off what the program can do.

Whether or not you'll like this program depends upon how you want to use it. If you want to learn about "true" musical notation, chords, rhythm and background and be able to translate what you do on the computer to another musical medium, try another program. What Songwriter will do for you is give you a graphic representation of musical patterns and the physical relationship between notes of different values and durations. I found this program to be a fun and effective introduction to the physics of music, 'for age 5 and up. ■

$9.95 each, 48K disk. Thunder Mountain, P.O. Box 1167, Northbrook, IL 60065. (800) 221-9884. In Illinois, (800) 942-7315.

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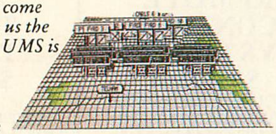

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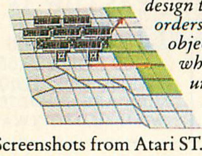

Screenshots from Atari ST.

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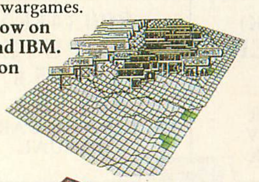

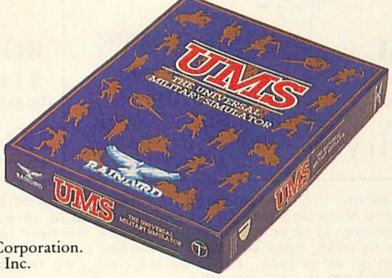

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ATARI SX212 & SUPRAMODEM 2400
continued from page 19

didn't encounter any problems during our BBS tests. Not everyone likes the small case because their telephones won't fit on top of the modems.

2400 BAUD TRANSFERS

I wanted to see how long it took to transfer data at 1200 and 2400 baud, using the SupraModem 2400 with Flash software. So I created a file of exactly 100,000 bytes and stored it on a 10Mb SupraDrive hard disk. The file took 22 minutes and 33 seconds to upload at 1200 baud under XMODEM protocol. And it seemed as if it would need about 15 minutes at 2400 baud, but I never found out for sure. I'll blame line noise—not an unusual problem at that speed.

My first attempt sailed along until the modem tried to upload block 125. After 15 attempts, it aborted the upload. Each attempt took about 15 seconds, and six minutes were needed to get that far. The second attempt went well—all the way to block 704. The upload was aborted, again after 15 attempts, and this time it took about 17 minutes.

Overall, the SupraModem 2400 seems to be a good product. I wish I'd been able to come up with a complete transfer at 2400 baud, but for the price I don't think you can go wrong, even if you rarely expect to use this SupraModem at 2400 baud. ■

SLEUTH
continued from page 17

PROGRAM TAKE-APART

10-20 Call the initialization routines.

40-140 Call the move-cursor routine. Check for a match and a winner—if there is a match, increment the score. Otherwise, begin the countdown.

160-210 Check the joystick for cursor movement. Check the trigger. Adjust the to cursor's position and redraw it.

230-240 Move the Player/Turn indicator.

260 Indicate the winner and animate that player's man.

280-290 Reveal the icon beneath the present cursor position.

310-330 Indicate a match by making the player's man jump.

350-390 Initialize variables, create the playfield.

410-440 Display the title screen and redefine the character set.

460-520 DATA for icons. ■

Sleuth joins Cliffhanger *(November 1986),* Vectron *(March 1987) and* Citadel *(June 1987) as* ***Antic*** *games from Heath Lawrence of Port Elgin, Ontario. These programs were all part of an unpublished book of Atari games.*

FOR MORE ARTICLES LIKE THIS, CIRCLE **202** ON READER SERVICE CARD.

Listing on page 67

P.S. Envelope Maker

Automate your "Print Shop" envelopes

By STANLEY HARRISON

With this short programming patch,* P.S. Envelope Maker *(December 1987), which prints out envelopes sized for Print Shop cards, automatically inserts addresses from mailing lists including* Mighty Mailer *(September 1987). The complete BASIC program works on 8-bit Atari computers with at least 48K memory and a disk drive.

I tend to use Broderbund's Print Shop software to create lots of greeting cards for sending to friends and relatives. So I have personally gotten plenty of use from Todd Thedell's clever *P.S. Envelope Maker* (**Antic**, December 1987) which prints cut-out diagrams of pre-addressed envelopes just the correct size for Print Shop cards.

P.S. Envelope maker works on any dot-matrix printer compatible with Print Shop. It prints a mailing address and return address on each envelope. However, in the original program, you must type the new address every time you want to make a change.

Because I send a lot of computer-made cards, I maintain a mailing list of my usual addressees. I was interested in taking up Antic's offer to print the "first good programming patch enabling the envelope maker to use mailing lists from ASCII text files. . .including *Mighty Mailer* (September 1987)."

My P.S. Envelope Mailer patch gives the original program the option of either using ASCII disk file mailing-lists or typed-in individual addresses. It can also switch between lists like *Mighty Mailer*, which leave a blank line between labels, or plainer ASCII text files that don't have any blank line breaks.

You'll be prompted to type the number of lines in your current batch of labels. Each label in the file must have the same number of lines and, as in the original *P.S. Envelope Maker*, the maximum number of lines is four. And when you print a list of mailing addresses from disk, you will not be able to change the return address.

I also corrected a minor glitch I found in the original program. After the first run through *P.S. Envelope Maker*, if the user wants to change to different addresses the program generates a DATA LIST EXHAUSTED error at line 620. This is fixed by the RESTORE 210 command in my patch.

GETTING STARTED

Type in Listing 1, PATCH.LST, checking it with TYPO II. You'll need to store PATCH.LST on your disk without the TYPO II program, so LIST a copy to disk using the command:

LIST "D:PATCH.LST",0,31000

To merge the patch with the original *P.S. Envelope Maker*, first LOAD "D:ENVELOPE.BAS" (from **Antic**, (December 1987) and then ENTER "D:PATCH.LST". Remember to SAVE the modified program before you RUN it.

Antic Disk owners will find a copy of the completely patched program on the monthly disk under the filename ENVELOPX.BAS.

HOW TO USE

When RUN, the patched program asks if you want to use the default return address, displayed in the center of the screen.

Type [Y] and press the [RETURN] key to answer [Y]es for the current return address, or type [N] [RETURN] to

continued on next page

type a different one. You'll be given four lines in which to type your return address.

The program's default return address is stored in DATA statements in lines 210-235. If you want the program to use a different default return address, LIST these lines and substitute your new return address. Be sure to type this information in inverse video mode. Finally, remember to SAVE your modified program before you RUN it.

NOTE: If you only have a three-line return address, delete line 235.

Next, the program will ask whether you want to type the mailing addresses from the [K]eyboard or read them from a [D]isk file. Type [D] and take your mailing list disk, place it in drive 1 and press [RETURN].

The program will display a disk directory and ask you to type the name of your address file. At the next prompt, the program will ask whether you're using 3-line or 4-line addresses. Type a [3] or a [4].

Now just sit back as the program prints your envelopes. One by one, the program will display each address on-screen, ask you if it's correct, then print it out. ■

Stanley Harrison is a section manager for an agrochemicals manufacturer in Raleigh, North Carolina. He has been programming the Atari since 1982 and this is his first appearance in **Antic**.

FOR MORE ARTICLES LIKE THIS, CIRCLE **200** ON READER SERVICE CARD.

Listing on page 68

String Array Simulator

List processing power pick-up

By RICHARD WHITSELL

For tracking lists of names and numbers, arrays of strings come in very handy. But unlike most other BASIC programming languages, Atari BASIC doesn't provide for string arrays. So if you're an intermediate programmer you'll just have to fool BASIC with String Array Simulator. This BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.

Consider a "Battleship" game board. It is an indexed collection of holes into which we may place one peg per hole. In other words, it is an array of holes which holds our pegs, a "peg array."

Similarly, an array in Atari BASIC is an indexed collection of *variables* into which we may place *numbers*, one number per variable. Such arrays are handy for storing tables of numbers, such as multiplication tables.

To store text, string variables are commonly used. A string is an uninterrupted set of bytes whose length and address is known to the computer. In Atari BASIC, string variable names always end with a '$' character, such as X$, AB$ and Q$.

Most versions of BASIC, except Atari BASIC, let you use arrays of strings as well as arrays of numbers. These are indexed collections of *string variables* into which we may place *strings*, one whole string per variable.

FOOLING BASIC

The first thing I noticed about Atari BASIC was that it didn't handle arrays of strings. The reason is that Atari BASIC considers each string to be a one-dimensional array of characters.

For example, if A$="ABCDEFGHIJ", then A$(4,8) would give you "DEFGH", the fourth through eighth characters in A$. This really causes headaches for Atari BASIC programmers who want to manipulate lists of data that can only be put into strings.

But now there is a way to get around this limitation. We'll use a BASIC subroutine to simulate a string array. All the main program must do then is set a few variables and then GOSUB to the subroutine.

First, we'll DIMension a storage string, making sure it is large enough to hold our array of strings. Let the subroutines worry about positioning and retrieving the substrings within the array.

There are two ways to manipulate substrings. The only difference between methods is the way they track individual string lengths.

METHOD 1

The first method stores the length of the substring within the substring itself. Any length, from 0 to 255, can be stored as an ATASCII value in the first character of each substring.

continued on next page

Type in Listing 1, STRING1.BAS, check it with TYPO II and SAVE a copy before you RUN it. When RUN, it will prompt you to type 10 names. Press [RETURN] after each name. The completed list will be displayed in a table with the name lengths in a separate column.

Here's how the program works:

Line 10 defines the constant MAXNUM=10. This is the maximum number of strings you want in the array. MAXLEN=20+1 defines the maximum length of each string in the array, plus one character to hold the length.

Line 20 DIMensions the storage string to hold the maximum number of strings at their maximum length.

Line 30 DIMensions WORK$ to be the maximum length of any of the strings.

You only need two variables to call the subroutines: INDEX and WORK$.

INDEX is the index into the array. It tells the subroutines which string you want. Since arrays are traditionally based at zero, the index can be from 0 to 9 and the maximum number of strings is 10.

WORK$ is a temporary string for passing data to and from the subroutines.

To retrieve a string, set the value of INDEX and then GOSUB 5000. The string you want will return in WORK$. To store a string, set the value of INDEX, put your string in WORK$ and then GOSUB 6000.

If you look at the subroutines in STRING1.BAS, you get an idea of how the length is stored in the "array." That's why lines 5020 and 6020 read START=START+1, to skip over that length character before retrieving the string.

METHOD 2

The second method works just as well. As a matter of fact, you use the same two variables, INDEX and WORK$, that you used in the first method.

Type in Listing 2, STRING2.BAS, check it with TYPO II and SAVE a copy before you RUN it. This method stores the lengths in LENARRAY, an array of numbers specifically reserved for that purpose.

In the second method, Line 10 has been changed to show MAXLEN=20 instead of MAXLEN=20+1, because now we don't need that extra character to store the length.

Line 35 DIMensions the array of lengths to be used by the subroutines.

By the way, if you want to use strings longer than 255 characters, STRING2.BAS can do it without modification. But you'll have to change STRING1.BAS to store an extra character for the length.

Also, if you're not going to use all the strings in the array right away, it's a good idea to set all the strings to null (WORK$=" ") at the start of your program. This will keep you from pulling out garbage characters where you haven't stored a string. ■

Richard Whitsell of Norman, Oklahoma is a computer engineering student who programs on both the Atari 800 and the ST.

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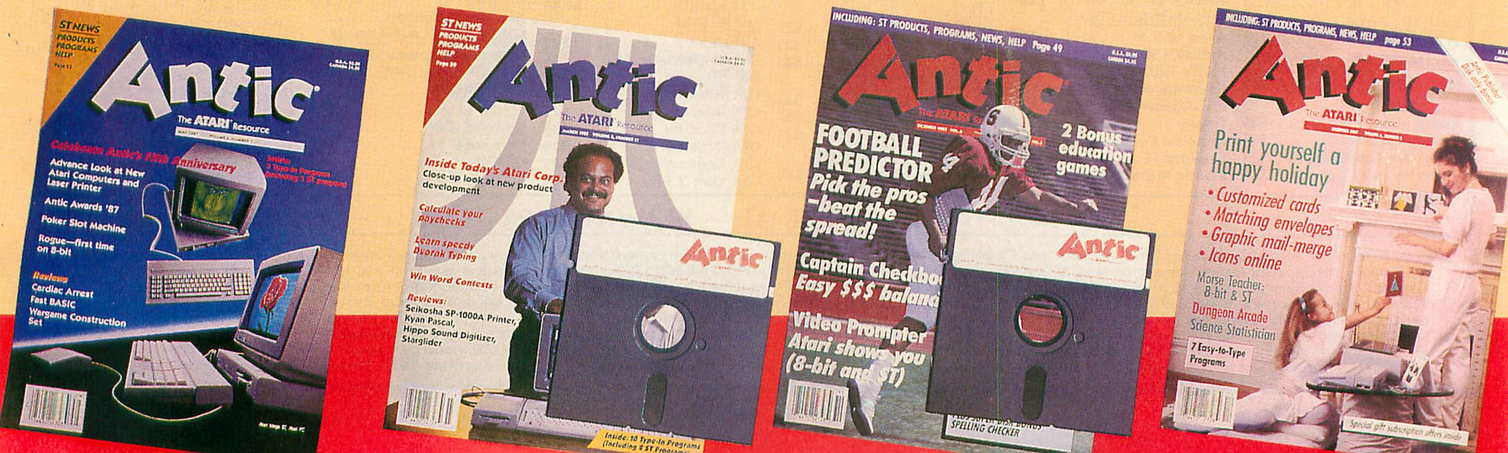


For 8-bit Atari

POWER TOOLS

Programmer's and power users' bonanza!

SUPERDOS

The Australian **SuperDOS** is compatible with Atari DOS 2.0 while providing much of the power of costlier disk operating systems. The user interface is virtually the same as Atari DOS, so you'll be comfortable right away.

SuperDOS supports all three densities—80K single, 130K dual/enhanced and 180K true double. Flexible RAMdisk support is provided for the Atari 130XE and upgrade formats including 128K and 256K Axlon, 256K XL and 320K XE.

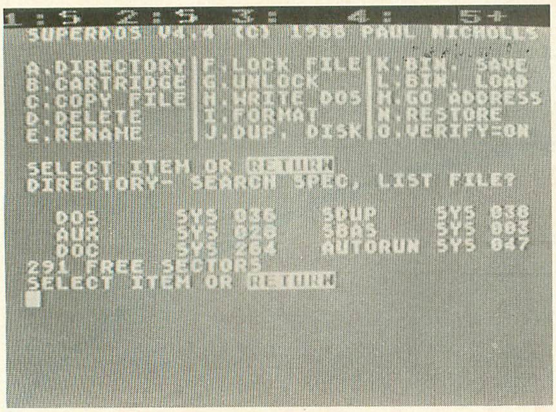
SuperDOS is also RAM-resident. When you exit BASIC to DOS, the SuperDOS menu pops up instantly. This is nice, but SuperDOS also has the highest LOMEM value of all Atari disk operating systems—with SuperDOS, Atari BASIC has only 26,077 bytes free instead of the usual 32,274. However, this can be remedied on XL/XE systems with a RAMdisk.

SuperDOS can be customized easily with its auxilliary DOS configuration menu, AUX.SYS. It supports four floppy disk drives and assumes that *any* drive reference above 4 is a RAMdisk. The AUX menu provides direct access to the nuts and bolts of SuperDOS. You can change parameters such as file buffers (which control the number of disk files that can be open) and drive buffers (the number of floppy drives connected to your computer).

Patching the disk with a sector editor can be clumsy and difficult to learn, but AUX provides a TRACE AND PATCH feature that lets you step through a file sector by sector. Then you can patch the file to skip a bad sector. You'll lose the data in that sector, but you can still access the rest of the file.

An automatic RAMdisk can be enabled or disabled from the AUX menu. SDUP, the SuperDOS utilities program, can be made resident for Atari 400/800 owners. By making it non-resident, XL/XE owners will retain SDUP on their RAMdisk, though it will still *appear* resident. This provides more working RAM in BASIC and Assembler.

continued on next page



Superbin, a binary file loader that lets you make bootable machine language game disks, can also be written to disk from the AUX menu. And a menu loader for BASIC programs, Superbas, is also provided.

WHAT IT HAS

Here are some of the differences between SuperDOS and Atari DOS:

CARTRIDGE returns control to an external cartridge. Internal Atari BASIC on an XL or XE computer can be toggled on or off. Turning it off gives you 8K more RAM for buffer space when disk files are copied.

COPY works just like Atari DOS 2.0 and 2.5, except that SuperDOS automatically determines the density of the source and destination disks, even on a single-drive system. Wild card characters in filenames are allowed, and you can even copy from disk to cassette.

RENAME: In Atari DOS, you've got problems if you rename JOHN.DAT to MATT.DAT when the disk *already* has a file called MATT.DAT. SuperDOS doesn't allow this. Also, you can rename files using wild cards.

FORMAT: SuperDOS is "density-smart" all the time, whereas many other multi-density disk operating systems must be *told* what the density of a disk is. You can also format RAMdisks with SuperDOS, specifying their density.

SuperDOS FORMAT also allows "skewed" sector formatting for Supermax drives. Skewed sector disks read and write much faster than standard format disks (while Atari DOS 2.0 and 2.5 can still read and write them). However, I'm aware of no such animal as a Supermax drive in the United States.

DUP DISK gives the option of formatting the destination disk. SuperDOS also lets you specify starting and ending sectors for a partial disk copy. DUP DISK doesn't copy empty sectors and it gives an option to retry if it finds a bad sector. Copying sectors to and from a RAMdisk is allowed if the RAMdisk is initialized to the same density.

RESTORE: When you delete a file, it will still show up in the directory, preceded by a minus sign. This is the SuperDOS way of telling you that the file has been removed—but can be recovered. Accidentally deleted files can be restored with this command if they haven't been overwritten.

VERIFY of disk write can be turned on or off. Turning it off disables the read-after-write that all disk operating systems use to verify the integrity of your disk files as they're created. This also speeds up disk-writing significantly, but you might write a bad file without knowing it.

When you first boot SuperDOS, you can print the manual (if BASIC is installed) or exit to SuperDOS. If you exit, the *first* thing to do is format and write a new SuperDOS master disk, then reboot with it. I've found that exiting the original SuperDOS master disk to BASIC, then trying to return to DOS, locks up the computer, but I'm certain this is just a quirk with the documentation printing utility since all my subsequent SuperDOS disks had no problems.

Another minor glitch is that whenever I run a cartridge from SuperDOS after loading a VBI routine, it gets disabled. However, if the VBI routine is hooked in from an AUTORUN file and the SuperDOS menu never comes up, it works fine.

If you want a disk operating system more powerful than Atari DOS 2.0S or 2.5 and more compatible than SpartaDOS or Atari DOS 3, you'll be pleased with SuperDOS. If you need the additional power of subdirectories,—you'll need to get SpartaDOS or MyDOS, or wait for Atari's upcoming ADOS. If you want support for more than four floppy disks and one RAMdisk, again SuperDOS won't do it. But if you're looking for a powerful, forgiving, user friendly, density-smart DOS, SuperDOS is super, especially at its low price.—MATTHEW RATCLIFF

$20, 24K disk. Technical Support, 205 Peoria Street, Daly City, CA 94014.

CIRCLE **241** ON READER SERVICE CARD

FLASHBACK!

FlashBack! is ICD's hard disk backup for 8-bit Atari power users. But you don't really need a hard disk to find this software valuable. FlashBack! also backs up your RAMdisks and floppies quickly and easily. And files can be restored selectively with simple file copy commands, or with the package's RESTORE.COM utility. ICD's SpartaDOS is required because FlashBack! uses the time and date stamps of your files for reference.

The main menu has seven options. SOURCE lets you specify a source drive, an optional subdirectory path to back up, and the destination drive. If you entered a subdirectory for the source, it will be duplicated on the destination drive.

FORMAT can be specified for your first backup job. Before writing the first destination disk, FlashBack! will prompt you for disk parameters, such as those found in XINIT (with support for double density—and ultra-speed, of course). This eliminates the need for a separate disk format process.

With SINCE DATE, only files modified since a given date will be copied. For this reason, accurate time and date stamping on your files is very important.

When all your options are set you can press [START] to begin the backup or [Q] to quit and return to DOS. FlashBack! creates a subdirectory on the source disk the

first time you back up a particular disk, which contains a list of all the files backed up. If FlashBack! requires more than one floppy disk for archiving your files, it will tell you when to swap disks.

RESTORE.COM lets you restore from your backup floppies to the original (or another destination). You can also decide, file by file, what will be restored. You can load and run files from the backup, or copy them as you would any other SpartaDOS disk. Unexpected problems may crop up when you attempt to load a file split across two backup disks, but RESTORE.COM can retrieve these files.

I use FlashBack! for daily backups of my RAMdisks, both in the computer's RAM and on my ICD 1Mb Multiple I/O Board. I have the ICD R-Time 8 cartridge clock, so time and date stamps are always correct. After a long night's work, I just run FlashBack! and specify the previous day's date as the reference time for backups. I don't have to remember which files I've edited,or perform unnecessary file copies. FlashBack! does all the work reliably and quickly.

I haven't found any real bugs in FlashBack!, but it seems memory-hungry. If I exit MAC/65 to SpartaDOS and execute FlashBack!, my 800XL will lock up. But if I remove the cartridge and turn off built-in BASIC, FlashBack! runs fine. Also, FlashBack! occasionally reports an unexpected error at the very end of the backup process. It makes me nervous, but ICD told me I could ignore it and that the software is being updated to eliminate this error report.

Overall, FlashBack! is very fast and reliable. It automates my file backups a great deal. It has helped me establish the wise habit of regularly archiving important work.—MATTHEW RATCLIFF

$29.95, 48K disk, requires SpartaDOS. ICD Inc., 1220 Rock Street, Rockford, IL 61101. (815) 968-2228.
CIRCLE **241** ON READER SERVICE CARD

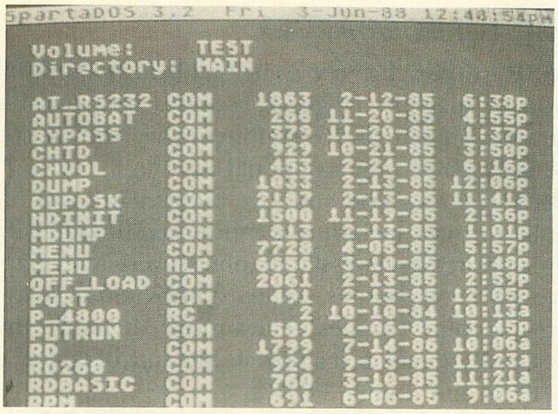
SPARTADOS TOOL KIT

ICD's **SpartaDOS Tool Kit** is a powerful utility package of eight valuable command files for your SpartaDOS system disks. Users of the powerful SpartaDOS disk operating system will love the increased productivity of their Atari systems.

Previously, the only way to change a directory name was to delete it and recreate it, but RENDIR.COM lets you change the directory name without affecting the files in that subdirectory.

How many times have you done an erase with the wrong template, trashing hours of valuable work? VDEL will ask for a confirmation prompt before deleting each file. If you enter a template for VDEL that might remove the wrong files, you have a second chance to prevent the demolition of important work.

When you can't find a file, WHEREIS locates it, searching all subdirectories. It allows wild cards, listing any file templates meeting your specifications, along with the complete directory path. If you use several subdirectories,



especially on a hard drive, WHEREIS can keep you from tearing your hair out.

ICD's 1Mb Multi I/O Board provides the equivalent of 5.6 double-density RAMdisks, printer spooler, RS232 interface, printer interface and hard drive interface. The MIO must be reconfigured every time it is powered up. Hard drive owners have no problem there, since the MIO ROMs automatically load configuration data off the drive at boot time. Now MIOCFG lets you save and store the MIO configuration on floppy disks, eliminating the manual setup procedure every time the MIO is powered up.

SORTDIR modifies the disk directory so you get a neat, tidy listing every time. Sort priority can be set by filename, type, size, or creation date. Any of these can be modified with the X flag, which reverses the sort.

Once you know all the commands, control of DOS goes much faster than using a menu interface. But if you want a menu for SpartaDOS, DOSMENU will suit your needs. It has the familiar look and feel of Atari DOS 2 and 2.5, with additional commands for the advanced features of SpartaDOS.

If you want your Atari to look and feel more like an IBM PC, just fire up COMMAND. You'll never get lost five levels deep in subdirectories any more. First, it gives you a directory path prompt. You can place 20 macro key definitions in a COMMAND.BAT file, giving you up to 20 different character strings executed automatically with [CONTROL] [SHIFT] key combinations.

You can place all your favorite BASIC or MAC/65 keywords in macro files, vastly improving your productivity. COMMAND adds screen color controls (COLOR BLACK, etc.), a COLD start command, HELP, PATH (subdirectory nesting is added to the drive prompt) and IBM mode. IBM mode kicks in some extra buffering features, allowing you to call up all or part of your last command line, edit it and re-enter it.

If a disk goes bad, I usually have a backup ready, but if not, then DISKRX provides the tools to repair and recover valuable data on a damaged disk, floppy or hard drive.

The SpartaDOS Tool Kit is an affordable, high power utility package. I highly recommend it.—MATTHEW RATCLIFF

$29.95, 48K disk, requires SpartaDOS. ICD Inc., 1220 Rock Street, Rockford, IL 61101. (815) 968-2228.
CIRCLE **242** ON READER SERVICE CARD

continued on next page

BASIC TURBOCHARGER

BASIC Turbocharger is an excellent book/disk collection of machine language routines for your BASIC programs—more than 160 routines in all. And the source code is available on an optional disk.

These routines load and save pictures in most of the popular formats, including compressed Micro Illustrator. They support Player/Missile Graphics, every Atari graphics mode, scrolling pictures, printer dumps and Display List Interrupt color changes. They move memory, invert, search and compare it, manipulate bits and, of course, double PEEKs and double POKEs.

The number routines convert between decimal, binary and hexadecimal numbers and do some fancy array manipulations, including search, sort and sum. They also provide a non-repeating random number generator—great for card games—and a proper delay timer so you won't use empty FOR-NEXT loops.

There are a lot of joystick routines, which I thought were unnecessary—until I tried them. They replace several IF-THEN statements and really speed up a program. This greatly improves the "feel" of the joystick.

BASIC Turbocharger will save you a lot of code, speed up your programs and make them more compact. It also makes difficult things easy, like putting text on a graphics screen or invoking the Atari Rainbow.

Each routine is a self-contained string of relocatable code—there's no jumping into the BASIC cartridge or the operating system. This means the routines work with almost any BASIC, including BASIC XL, BASIC XE, MicroSoft BASIC and TURBO BASIC XL. The strings of machine language code are inserted into your program and called with the USR statement. Most routines are less than one line long.

All routines are listed in the fine instruction manual. You could just type them in, but they're machine language and contain all those inverse graphic characters which drive us nuts when we type in the **Antic** listings. Fortunately, Alpha Systems includes a disk containing the routines.

The routines are contained in 120 short demonstrations, which makes it easy to learn how to use them, but hard to include them in your programs. First, you LOAD the sample program, renumber the lines you need and LIST those lines to a disk file. Then LOAD your program and ENTER the file with the machine language routine. It's tedious and cumbersome.

For my personal use, I created a disk with the routines LISTed to files. The routines are grouped by category, and each file has less than 100 lines, so all my programs now start at line 100. Whenever I need a routine, I ENTER that file, renumber the lines I need and delete the rest. It's much quicker.

Building that disk was time consuming, and Alpha Systems should include one in the package. It's the only weak point in an overall excellent product.—CHARLES CHERRY

$24.95, 48K disk. Source code $10 with main package, $15 separately. Alpha Systems, 1012 Skyland Drive, Macedonia, OH 44056. (216) 467-5665.

CIRCLE **237** ON READER SERVICE CARD

ENHANCEMENTS TO BASIC

Enhancements to BASIC is a comprehensive, self-contained program containing powerful tools for DOS, editing and debugging. The disk comes with three versions. While writing a program, you'll want the *full* 8K implementation unless the program is very large, in which case you'll need the 4K *half* implementation. For serious debugging, you'll want the TRACE version.

Enhancements to BASIC only works with Atari BASIC. In fact, during a one-time initialization process, it copies your BASIC into itself and modifies it. After initialization, it loads without using the computer's BASIC.

The added features are impressive: listing, renaming and cross-referencing variables; searching for variables, statements and strings; auto-numbering, renumbering and deleting blocks of lines; scrolling forward and backward in a program listing; 14 macro soft keys (seven of them programmable); a numeric keypad on the keyboard; and number entry in decimal or hexidecimal.

DOS functions provided by Enhancements to BASIC include directory, lock, unlock, rename, erase, format and run at address. Error messages are in English instead of cryptic numbers.

TRACE is a powerful debugging tool, common to many languages but missing from Atari BASIC. It lists each line as it's executed, making it easy to pinpoint the offending line and correct it. Tracing on an Atari is a special challenge. The graphics modes frustrate any simple listing techniques. However, the trace in Enhancements to BASIC lets you list the whole line or only the line number, list the lines to the screen or to a printer, and turn the trace on or off while the program is running.

Unfortunately, you can't view the trace and the program operation simultaneously (except by tracing to a printer). Carefully turning the trace on and off in the program can help, but it's still hard to see *what's* happening and *why* at the same time. The trace and the program should share the same screen, at least in Graphics 0.

The only other serious drawback to Enhancements to BASIC is that the disk is copy-protected. I could never use a language without backups. Of course, if your disk does get trashed, you lose only the enhancements; you can continue to program with BASIC. And you can still run your programs.

Finally, programmers should consider that many of the features of Enhancements to BASIC are available in other BASIC dialects. Some programmers may prefer to change dialects, rather than upgrade Atari BASIC.—CHARLES CHERRY

$24.95, 48K disk. Available by mail only. Hathaway Electronics, P.O. Box 168, Rices Landing, PA 15357. (412) 592-5981.

CIRCLE **238** ON READER SERVICE CARD

continued on page 38

GTIA Joystick Painter

Powerful Atari Animation Tool

By ROBIN ALAN SHERER

GTIA Joystick Painter is a powerful drawing program for nine-color Atari Graphics 10 mode. This BASIC program works on all 8-bit Atari computers with at least 32K. A disk drive is required.

Atari graphic modes 9, 10 and 11 are called GTIA modes.

The Atari's main microprocessor chip is saddled with an enormous workload, because the Atari has so many different graphics modes, hue/luminance combinations, sound features and controllers for devices such as joysticks. That's where the GTIA chip comes in, as well as other special chips such as ANTIC and POKEY.

Earlier Ataris used the CTIA (Color Television Interface Adaptor). But today almost all Atari 8-bit users have computers with the newer GTIA chip. GTIA stands for Graphics Television Interface Adaptor (or George's TIA, for George McLeod who designed the chip). To make sure your computer has GTIA, type:

```
10 GR.9:GOTO 10
```

If your screen turns black, you have it. If nothing happens, you don't.

Among other things, the GTIA chip controls color and luminance (brightness) of ordinary playfield graphics—such as those called from BASIC with COLOR, PLOT and DRAWTO statements while in graphics modes 3 to 11.

GRAPHICS 9, 10, 11

Graphics 9 is a one-color, 16-luminance mode. Graphics 10 has nine colors with independent hue and luminance settings. Graphics 11 has 16 colors and only one luminance. Each mode has 80 columns and 192 rows. Modes 9, 10 and 11 are actually variations on Graphics 8, so details such as memory required to map the screen (about 8K) remain the same.

In BASIC, you can reach any of these GTIA modes with normal GRAPHICS statements. You can also POKE 623,64 (which sets bit 6) to turn on Graphics 9, POKE 623,128 (which sets bit 7) for Graphics 10 and POKE 623,192 for Graphics 11 (which sets bits 6 *and* 7).

When the GTIA bits are set, the computer interprets display memory differently. In Graphics 8, each memory location keeps track of eight consecutive pixels. Each byte of memory can hold a value between 0 and 255—corresponding to the number of combinations of lit and unlit dots you can make in each eight-dot byte.

But in the GTIA modes, not only can each dot be turned on or off, but it also must contain information about which of 16 hues or luminance levels is displayed. And, unlike Graphics modes 1-8, there are no text windows in the GTIA modes.

In Graphics 8, each row can display 320 dots. Since you need extra color information for each dot in modes 9, 10 and 11, you only get 80 dots per row. Also, modes 9 and 11 don't have 16 color registers available—just five regular color registers.

You can only get additional colors by making the color value of each dot onscreen directly represent the color or luminance of the dot, instead of indicating which color register to look into for that value. If you want to change the colors of some dots onscreen, you'll have to redraw each one in its new color.

To see how GTIA modes work, type this short program:

```
10 GRAPHICS 9
20 SETCOLOR 4,12,0
30 FOR I=0 TO 15:COLOR I
40 PLOT 4*I+5,2:DRAWTO 4*I+5,190
50 DRAWTO 4*I+6,190:DRAWTO 4*I+6,2
60 NEXT I
70 GOTO 70
```

You should see 16 shades of green bars on the screen. To see 16 different colors at once, substitute these lines:

```
10 GRAPHICS 11
20 SETCOLOR 4,0,4
```

Here's a set of practical instructions for Graphics 9:

1. Use a GRAPHICS 9 command to set the mode.

2. Use SETCOLOR to select the color to be used. The register used to specify this color is 712, which holds the background color. Use the form SETCOLOR 4,C,0 where C is between 0 and 15.

continued on next page

3. To PLOT or DRAWTO, use COLOR S to specify the shade, where S is between 0 and 15.

4. Now PLOT and DRAWTO normally. The horizontal coordinate must be between 0 and 79, and the vertical coordinate must be between 0 and 191.

Try this:

```
100 GRAPHICS 9
120 SETCOLOR 4,15,0: REM Color is gold
130 FOR I=25 TO 49
140 C=I+(74-I-I)*(I>37)-22
150 D=INT(SQR(144-(I-37)*(I-37)))/2
160 COLOR 15-C:PLOT I,32-D:DRAWTO I,32+D
170 COLOR C:DRAWTO I,155+D
180 NEXT I
190 GOTO 190
```

GTIA JOYSTICK PAINTER

With this lesson's GTIA Editor, you can easily create ambitious medium-resolution Graphics 10 drawings, SAVE them to disk and LOAD them later. Type in Listing 1, GEDIT.BAS, check it with TYPO II and SAVE a copy before you RUN it.

If you have trouble typing the special characters in lines 2030, 2080, 2130, 2180 and 2250, don't type them in. Listing 2 will create them for you. Type Listing 2, check it with TYPO II and SAVE a copy to disk. When RUN, Listing 2 creates these hard-to-type lines and stores them in a disk file called D:LINES.LST.

To merge the two programs, LOAD "D:GEDIT.BAS" then ENTER "D:LINES.LST"—remember to SAVE the completed program before you RUN it.

USING THE PAINTER

Plug a joystick into port 1. When RUN, GTIA Joystick Painter displays eight colored blocks at the bottom of the screen (your "palette" of color choices) and four flashing marks (the boundaries of your drawing cursor).

Press [C] to pick a color to draw with. A line will appear under the present color. Move the joystick left or right to select one of the eight default colors. After you select a color, you can change it by moving the joystick forward and backward. When you're satisfied with your palette, press the joystick button.

Now use the joystick to position the flashing cursor. To draw, hold down the joystick button. Release it to stop drawing. To change the size of the drawing cursor, press [CONTROL] and an [ARROW] key. To erase the screen, press [SHIFT] [CLEAR].

Press [E] to change the cursor color to the white background color. Then erase as much as you want by pressing the trigger. To start drawing again, select a new color by pressing [C].

Press [S] to SAVE your drawing. Your picture will temporarily vanish and a "Filename to SAVE?" prompt will appear in its place.

Now, type in a filename for your picture and press [RETURN]. The program will SAVE your drawing, along with the eight color values of your palette.

Press [L] to LOAD a drawing. At the "Filename to LOAD?" prompt, type in the name of the file to load and press [RETURN]. The program will LOAD the drawing and its color palette.

Pressing [RETURN] at either of these prompts will return you to the drawing screen.

GRAPHICS 10

Graphics mode 10 might be more important than any other Atari Graphics mode because it offers an extended selection of the number of possible onscreen colors—without using the Player/Missile graphics which will be introduced in a later lesson. It also allows color indirection, meaning that you can select nine colors from the 128 color/hue combinations and that you can change the color of any object onscreen with just one SETCOLOR or POKE command.

Because of the differences in possible color/hue combinations, the operating instructions for Graphics 10 are different from Graphics 9 and 11:

1. Use the GRAPHICS 10 command.

POWER TOOLS FOR 8-BIT ATARI
continued from page 36

BASIC VIEW

BASIC View is a very good debugger for BASIC programs and really does provide a view into the workings of your program. When you RUN a program, a listing scrolls past and lines are highlighted as they are executed. It is the most graphic trace function I have ever seen. You really get a feel for the flow of the program.

The BASIC View screen is divided into three areas: the program listing, a display of two variables and a menu of BASIC View commands. It's very easy to use, and most functions are controlled with a joystick. The variable display shows the values of two variables or addresses.

The menu has commands to scroll the listing forward and back, RUN the program, RUN from a given line, set a stop line and set a count for the stop line. For instance, you can set the program to RUN from line 120 and stop on line 1560 during the fourth time through a loop. The speed at which the program RUNs is adjustable (very useful) and you can jump back and forth between the program screen and the BASIC View screen.

Although BASIC View is the best debugger for Atari BASIC programmers, it's not perfect. The biggest problem is that it doesn't show enough information. Two variables aren't enough: you need at least four. While you can select one of the variables, BASIC View displays the one declared next as the other one. Of course, by declaring

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GTIA GRAPHICS MODE SUMMARY

SCREEN SIZE (COLUMNS×ROWS) 80×192 — GRAPHICS 9 — MEMORY REQUIRED: 8138 BYTES

DISPLAY TYPE	DEFAULT COLORS	SET COLORS (N)	POKE ADDRESS	COLOR (N)
GRAPHICS 9				
ONE HUE,	BLACK	4	712	0
16 LUMINANCES,				1
CHANGE HUE WITH				2
SETCOLOR 4, HUE, 0				3
OR POKE 712, HUE	DARK GRAY			4
				5
				6
				7
	GRAY			8
				9
				10
				11
	LIGHT GRAY			12
				13
				14
	WHITE			15
GRAPHICS 10				
NINE COLORS	BLACK		704	0
	BLACK		705	1
	BLACK		706	2
	BLACK		707	3
	ORANGE	0	708	4
	LIGHT GREEN	1	709	5
	BLUE	2	710	6
	RED	3	711	7
	BLACK	4	712	8
GRAPHICS 11				
ONE LUMINANCE,	BLACK	4	712	0
16 HUES, CHANGE	GOLD			1
LUMINANCE WITH	ORANGE			2
SETCOLOR 4, LUM,	RED ORANGE			3
0, OR POKE	PINK			4
712, LUM	PURPLE			5
	PURPLE BLUE			6
	AZURE BLUE			7
	SKY BLUE			8
	LIGHT BLUE			9
	TURQUOISE			10
	GREEN BLUE			11
	GREEN			12
	YELLOW GREEN			13
	ORANGE GREEN			14
	LIGHT ORANGE			15

2. Select a color register to draw with using the COLOR command. Here, that command refers not to the color value itself, but to the *register* that contains the color value. Therefore the range of values is 0 to 8.

COLOR REGISTERS

Before you use a color register, you'll probably want to know what actual color value it contains and how to change it. The default colors of the normal playfield registers are orange, blue, pink, green and black. These can be controlled by the SETCOLOR command.

Since register 0 corresponds to memory location 704, COLOR 0 will set the color to be plotted according to what's in 704. To calculate this number, use this formula: N=(16* color value)+luminance value.

For example, to set color register 0 to the background blue of a Graphics 0 screen, you'd want the value generated by the statement SETCOLOR x,9,4. Since the color value is 9 and the luminance value is 4, the number to POKE into 704 is (16*9)+4, or 148.

GRAPHICS MODE 11

Graphics 11 is almost identical to Graphics 9—except that it offers *16* colors at *one* level of brightness. The instructions for using it are almost the same as those for Graphics 9:

1. Use a GRAPHICS 11 command.

2. Use SETCOLOR to select the color to be used. Use the form SETCOLOR 4,0,B, where B is an even number between 0 and 14.

3. To PLOT or DRAWTO, use COLOR. The colors correspond to the shades you would normally use for the second value of the SETCOLOR command.

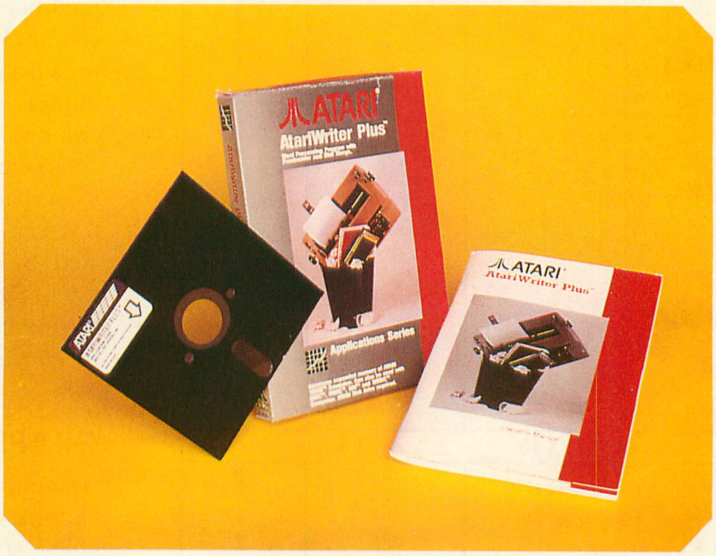
4. Now PLOT and DRAWTO normally. The acceptable horizontal and vertical boundaries are the same as for Graphics 9. ■

Robin Sherer is co-author of Master Memory Map of the Atari *and other Atari reference books.*

Listing on page 72

More* Secrets of Atariwriter Plus

Mail merge, RAMdisks, macros, wildcards and more . . .



Mary Rhomberg Peloquin

By KEVIN STEELE

I was one of first Atari 130XE owners using Atariwriter Plus, the word processing software featuring mail merge, a built-in spelling checker and support of the 130XE's extra 64K memory. My copy of Atariwriter Plus was so early that it came in a manila envelope with photocopied instructions.

After using this fine word processor extensively, I've learned a number of tricks that make Atariwriter Plus more powerful—such as using it with a RAMdisk, creating pseudo-macros, editing mail merge entries from within the text editor, avoiding bugs that can ruin your printouts, using wildcard disk operations, plus other techniques that give you the most from features already built in.

MAIL MERGE MAGIC

If you ever used the Atariwriter mail merge function, odds are you've been frustrated by it. Data entry is awkward, the field size is too small, and printing a file with mail merge entries literally takes hours if you have several records. Here are a few steps to help ease the pain.

First, the lengths of the fields are normally limited to 20 characters, but don't let that stop you. If you place multiple mail merge entries in a text file, one after another, in effect you can expand a data field to as many as 300 characters.

However, this is tricky to pull off. The mail merge commands in the text file must be separated by a space and you can't split a word between fields. Otherwise, combine as you wish. I've used this trick to create form letters

(Secrets of Atariwriter Plus by Carolyn Hoglin is a different collection of advanced tips which appeared in the July 1987 issue.*—ANTIC ED)

that print address lines longer than 20 characters.

Suppose you want to print out more than one space between different parts of your data fields—such as two spaces before a zip code. Place the extra spaces at the beginning of the second field, because Atariwriter Plus removes all trailing spaces in mail merge fields when printing.

Another thing that the Atariwriter Plus mail merge program removes is all dashes in a line. This makes it difficult to enter hyphenated names, street numbers and post office boxes. To get around this, when entering a line requiring a dash, simply enter your text, including dashes, and space over the default dashes already in the line.

When the line looks right, leave it by pressing [CONTROL] [DOWN ARROW] to move to the line below. The dashes will stay where you typed them. The only place this trick doesn't work is in the last line of the record. Here you must press [RETURN] to enter the record into memory.

Another convenient trick is editing mail merge entries from within the text editor. You can change data and add or delete records without waiting for the mail merge program to load. (However, you must create a new mail merge file *with* the mail merge program.)

After creating a record, load it into Atariwriter Plus and [E]dit the file. You can change anything in the records, but make sure all the entries have the proper number of spaces, and all records have the proper number of entries. To add a record, precede it with a [CONTROL]-[ESC] [CONTROL]-[INSERT] character sequence. Also make sure that the entire file ends with a [CONTROL]-[ESC], [CONTROL]-[DELETE]. When you save the file, use the Save ASCII ([CONTROL] [S]) option from the main menu.

Perhaps the most irritating feature about mail merge is its snail-like speed. A form letter with 30 records can keep the disk drive running continuously for an hour or two. A RAMdisk will cure this problem—if you place the mail merge file in it before trying to print.

To use a RAMdisk with a 130XE, load DOS 2.5 with RAMDISK.COM present on the disk. Then use the Binary Load option (L) to load AUTORUN.SYS off the *non-XE* side of the Atariwriter disk. When the program finishes loading, D8: will be at your disposal. If you forgot to recopy your data file before booting the word processor, just load the file into Atariwriter Plus, then save it to D8: as an ASCII file. The computer will keep sending forms to the printer as fast as it can print.

WATCH OUT

Every program has its glitches—and they tend to surface at the least opportune moment. Some traps to watch out for:

1. If you use the Block Center Right option—[CONTROL]-[C] [CONTROL]-[C]—with a series of lines padded to the same lengths, make sure every line has at least one blank at the end. Otherwise, they will not align correctly.

2. The extended XE version doesn't always divide long files correctly between the memory banks. Make sure you check the file after it loads—sometimes words will be duplicated, broken in half, or just missing.

3. If you have a header in your file, and set the top margin in the global format screen to 0, the computer becomes confused and formats blank page after blank page. If you specify a footer and set the bottom margin to 0, the program will try and print it below your page length boundary, usually meaning your footer will end up on the top of the next page.

4. I've had problems with the computer sending a linefeed to the printer when accessing either the spell checker or mail merge sections of Atariwriter Plus. This may skew your next printout, so beware.

5. Other users seem to have found small errors in the default printer drivers. However, the only error I encountered in the Epson FX-80 driver is lack of support for reverse line feeds, which the printer is capable of.

TIPS & TRICKS

MACROS: Use the block save command to save useful sections of a file—such as unusual printer codes, a template for a title page, or a description you plan to put in several letters. If you save each of these under a one-or-two letter filename, such as I for Italics, or T for title page, you can load them in with three or four keystrokes using the [CONTROL] [L] option. If you set up a RAMdisk, they will load instantly.

WILDCARDS: Since Atariwriter Plus comes with DOS 2.5 built in, several DOS features are available from within the program. The most important is wildcard disk operations. Using the asterisk (*) and question mark (?) wildcard characters, you can delete entire groups of files. Hint: If you want to use a wildcard to perform a global operation like deleting all files ending with a certain extender, say .TXT, use a question mark first, then an asterisk, then the extender: ?*.TXT. Otherwise, the program will reject the wildcard operation.

BANK SEPARATION: With the three banks of memory in the 130XE, you can store extremely long files. But what if you want to use them as separate buffers? The easiest way is simply to end banks one and two with a [CONTROL] [E]. This way the banks won't overlap on a page when printing out. Each bank will begin on a fresh page. One catch: The file won't separate the same way next time you load it. So you may need to cut-and-paste the file sections back into their respective banks.

FORMAT TEMPLATE: Setting and resetting the global format commands for each new file can be tedious. Why not just save the format commands in template form? Set up the format commands the way you want, enter one space in the text editor, and save this one-space file under a name such as TEMPLATE. It will be ready to load every time you want to start a new writing project. ■

Kevin Steele of Pittburgh, Pennsylvania just graduated from Grove City College as a computer systems major.

Atari's 12 New Entertainment Cartridges

Mary Rhomberg Peloquin

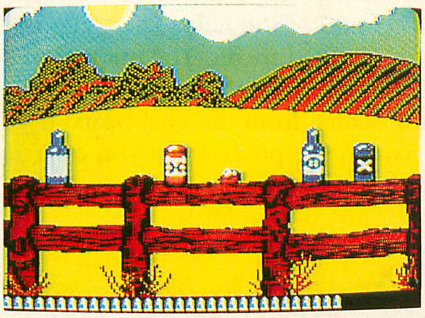
Bonanza for ALL 8-bit gamesters!

By DAVID PLOTKIN

Continuing **Antic's** policy of reviewing all Atari XE Game System cartridges as soon as they become available, this article looks at the 12 new carts—priced $19.95 to $22.95 each—that shipped at the beginning of 1988.

According to our latest word from Atari, game cartridges will be released in smaller numbers throughout the year. Expected this spring are **Food Fight**, the **Gato** submarine simulation, **Necromancer** and **Desert Falcon**. Don't forget that XE Game System cartridges will work on *any* Atari 8-bit computer.

We'll start off this month's reviews with the one brand-new game in the batch. All the other software has previously been available either on disk or in coin arcade versions that I've enjoyed playing for years.



BARNYARD BLASTER

Barnyard Blaster is a superb game that also brings some great news—the Atari Light Gun works just fine! Those aiming inaccuracies noted in my article, *Shootout of the Video Game Systems* (**Antic**, March 1988) apparently should have been attributed to the Bug Hunt software included with the XE Game System.

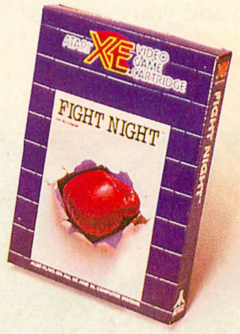
Barnyard Blaster's background graphics are colorful and the target animation is excellent. Inanimate objects explode convincingly, while the animals disappear in a tasteful twinkle. Each of the three scenarios has an introductory screen that you can blast realistic holes into.

You simultaneously blast away at stationary objects—pumpkins, bottles, watermelons—and moving targets—gophers, mice, chickens. Ammunition is limited and there's a bonus round where you shoot bottles thrown into the air by "Gramps." Sometimes a blank rectangle or garbage appears on the screen instead of the score, but this doesn't seem to affect the game.

ARCHON

Archon is "the battle between the dark and the light." On a chessboard-like field, you control various pieces that each have differing weaponry, movement, distance, lifespan and other traits. Although the two sides are fairly evenly matched, the pieces are *not* identical. Archers use arrows, trolls use rocks, knights use swords, manticores use bolts, and magic spells are used by wizards on the right and sorceresses on the left. Archon is a game for one or two players, but be warned—the XE Game System is a *mean* opponent.

When it's your turn, use the joystick to move. Some pieces can fly or teleport while others can be blocked on the ground. If you land in the same square as another piece, you fight to the death. Pieces are more powerful on squares of their own color. And some squares *cycle* through the colors, so keep on your toes. The battlefield is littered with ever-changing obstacles, which can shield a piece from attack. And it takes a while to recycle your weapons—you can't just hold down the fire button and blast away.



FIGHT NIGHT

In **Fight Night**, your boxer can climb into the ring with any of five challengers, controlled either by computer or by another player. Joystick and trigger combinations give you eight possible punch and block maneuvers. Each challenger has a specialty. For example, Hu Sim has a mean karate kick to the midsection, and the British Bulldog can belt you so hard that your onscreen alter ego's neck stretches. All the computer opponents have weak spots except the champ—the Bronx Bomber.

The Tournament option lets you set up a tree of elimination fights. Main Event lets you control your fighter against the computer challengers. If you win you move on, but if you lose, you can have a rematch. You can build your own fighter by choosing various body parts from the available selections, even deciding how resistant your fighter will be to head and body blows. (However, resistance to one makes him succeptible to the other.)

You can save completed fighters to memory for the rest of the current play session, or to disk if you have a disk drive. You can also use the training and sparring options to practice, although with the sparring option I was unable to figure out how to control the fighters. I also couldn't tell how to use the constructed boxer in the Main event, for which I blame the documentation.

ONE ON ONE

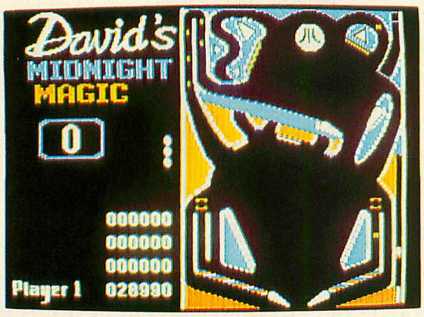
In **One on One**, you control either Julius "Dr. J" Erving or Larry Bird in a game of one-on-one basketball. These two basketball greats participated in the design of the game, and their strengths and weaknesses are well represented. You can play against another player or the computer, using your joystick to move, attempt steals, block or shoot.

The graphics are excellent and smooth. Dr. J's famous "jump and turn" shot is spectacular, and the shattering backboard on an enthusiastic slam dunk is very funny.

continued on next page

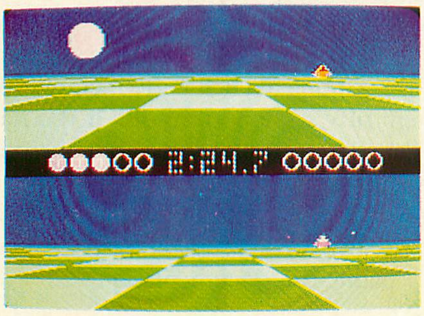
There is even instant replay for a particularly impressive move. Levels range from "Park and Rec" to "Pro," and the computer gets successively better as an opponent in each level.

You lose the ball if you make an illegal move. Commit more than five fouls, and your opponent goes to the line for a free throw. Even fatigue and hot streaks come in. You can regain energy by dribbling the ball or use it up by running around the court. One on One is a lot of fun to play with a friend and you even have a chance against the computer.



DAVID'S MIDNIGHT MAGIC

This is video pinball, complete with bumpers, drop targets, rollovers and flippers. The joystick starts the ball and flips the flippers, although you must move the stick (rather than pressing buttons) for the flippers, so the action takes a little getting used to. You can even bump the table, but just as in the real thing, you might TILT. There are bonuses and options for multiple players. The graphics and sound are well done, and **David's Midnight Magic** is a lot of fun.



BALLBLAZER

In **Ballblazer**, a futuristic sports contest for one or two players, you guide your "rotofoil" over a checkerboard playing surface, attempting to gain control of a floating ball and send it between two goal posts.

Half of the screen shows *your* view, and the other half shows your opponent's—you can even see yourself from your opponent's viewpoint. The graphics are outstanding, with a smoothly moving checkerboard playing field that gives a realistic 3-D perspective.

You can steal the ball from your opponent and then use your joystick to move the rotofoil toward the goalposts at either end of the field. The goalposts *move*, so hitting them can be difficult. The number of points you get for shooting the ball between the posts varies depending on the distance from the goal posts. If you can get the ball between the posts when you can't see them—quite a trick—you get three points. (I usually get real close and settle for just one point.)

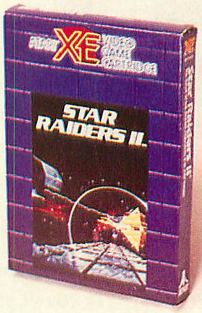
BLUE MAX

In **Blue Max** you fly a World War I biplane over enemy territory and do as much damage as possible with guns and bombs. The three-quarter view features a well-rendered, smooth-scrolling landscape with buildings, tanks, anti-aircraft guns, rivers, boats, bridges, cars and trees. And enemy aircraft—better avoided if possible—do sometimes appear.

Occasionally you'll see an airfield where you can refuel, re-arm and repair damage. Watch the onscreen altitude gauge: If you fly below 24 feet, your guns will damage smaller objects on the ground, but don't fly too low, or you'll crash.

To drop a bomb, climb a little, then dive, then press the fire button. Bombs are especially useful for buildings and bridges with flashing targets, and you can score big by sinking a ship with a bomb—which requires really good aim. The final goal is to fly into the enemy's capital city and bomb his headquarters.

Almost everything except the trees will shoot back at you. Sustain too much damage and you'll crash. Loss of your guns or bombs, or a hole in your fuel tank, are good reasons to look for a friendly airfield. But even on the ground, your troubles are not over—an enemy plane could bomb you. This is the part of the game I didn't like, since you're helpless on the ground with only one life.



STAR RAIDERS II

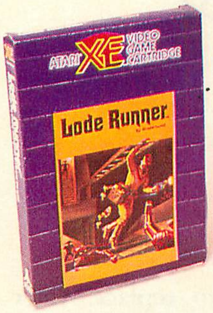
In this sequel to the original Atari blockbuster space game, the Zylons are again on the attack and sending ships from a neighboring star system. You must defend the Celos IV system's four planets not only by destroying the Zylon ships, but also by warping to their star system and wiping out the bases which are producing the attacking fleets.

To accomplish this, you have a single star fighter. It has shields, three kinds of weaponry, warp drive and subspace radio. There's a star map used for selecting warp destina-

tions. You also must protect three space stations which you need for refueling and repair.

To win, you must wipe out attacking fleets trying to destroy your cities. If they're all destroyed, the game is over. Each fleet has a squadron of small fighters that attack first. Wiping these out with your laser cannon brings on the "destroyers," for which you'll need your ion cannons. Once you have cleared out the Celos IV system, you can warp to the enemy system and use "surface bursts" to destroy bases on the planet surfaces. If you wipe out all bases and remaining fleets, you win.

Star Raiders II is very playable. It's completely different from the original Star Raiders, yet maintains that same desperate flavor. The graphics and animation are excellent.



LODE RUNNER

Imagine 150 screens—some devilishly clever—for you to guide the **Lode Runner** through, each containing platforms, ladders, bricks, poles—and guards. Your goal is to pick up all the pots of gold on a screen. When you do, a ladder appears which leads you to the next screen. Drilling holes in the bricks can trap guards. If you time it right, the bricks will grow back over a guard. This is the only way to grab his gold.

There are a variety of controls, including ways to "cheat" by giving yourself extra lives or advancing to another level and picking up where you left off. This makes the game even more fun, although the high score is not kept if you use these methods.

Lode Runner also lets you build your own screens. You can save as many as 150 additional screens on disk, if you have a drive. Otherwise, you can still design a screen, although it's lost at the end of the current play session. The editor provides nine different types of items (bricks, poles, ladders, guards, etc.) on each screen, and lets you test each screen.

BATTLE ZONE

Adapted directly from the arcade version, **Battle Zone** places you in a tank, battling enemy tanks and other vehicles. All the details are rendered in line drawings. (The original used vector graphics.) Your radar screen spots enemies; you must line one up in your sights and blast it.

The landscape is littered with obstacles, which can block you at critical times and prevent you from escaping when the enemy shoots back. This, coupled with the fact that graphics don't always make clear what's going on, makes this a rather frustrating game.

HARDBALL

With **HardBall**, you can play baseball on your XE Game System against either a friend or the computer. You can change the lineup, shift the infield or outfield or choose a designated hitter. Once the game starts, you control the pitcher or the hitter.

The view is over the pitcher's shoulder, with the infield diamond in the lower right corner. The pitcher can choose the pitch (fastball, offspeed, change-up, etc.) and location, while the batter chooses when (or if) and where to swing.

If the ball is hit, the view shifts to the infield or outfield, and the fielder is controlled by the defending team. Whoever fields the ball can throw it to any base to cut off a runner. HardBall has excellent graphics and sound. It supports extra innings, tiring pitchers, stealing bases and changing the lineup.

RESCUE ON FRACTALUS

From its animated launch sequence to the realistic mountains and valleys, **Rescue on Fractalus** is an exciting and very playable game. You pilot a spacecraft whose mission is to rescue downed pilots on the planet Fractalus. Your long-range scanners tell you where the pilots are, but you must deal with enemy saucers and lasers as well.

You have an unlimited supply of torpedoes for destroying enemy installations, and you are heavily shielded as well—although it depletes your fuel when your shields are taxed. When you locate a pilot, you must land and pick him up. Your ship gains fuel from a downed craft, and when you have rescued the required number of pilots, a mother ship takes them and you move to the next level.

Besides being very entertaining, the thing which sets Fractalus apart is the graphics. The animated control panel is impressive, but the craggy surface of the planet, generated using the mathematical technique of "fractals," is extraordinary. You can fly between mountains, skirting the sides of valleys and swooping over long ridges to pounce on the enemy. ■

$19.95 to $22.95 each. Atari Corp., 1196 Borregas Avenue, Sunnyvale, CA 94086. (408) 745-2000.

CIRCLE **240** ON READER SERVICE CARD

Atari's New Super Disk Drive

First look inside the XF551

Reviewed By RICH TIETJENS

Atari's newest disk drive for the XL/XE line of computers has finally reached the market (although with remarkably little fanfare). The new Atari **XF551** carries the same $199.95 list price as the good old 1050 drive it is meant to replace. Later this year Atari's newest disk operating system, ADOS by Bill Wilkinson, is supposed to be available. The first shipments of XF551 drives came with Atari DOS 2.5 which, while an adequate earlier Wilkinson-written DOS, doesn't really do justice to the capabilities of this powerful hardware.

Mary Rhomberg Peloquin

FIRST IMPRESSIONS

The XF551 is eerily silent during operation. When I turned it on, I expected something like the "coffee grinder" sounds of the old Atari 810 or the "bear growl" of the 1050. Instead came a brief whirr—then, nothing. There is often a two-second pause when starting a boot, while the drive determines the density of the disk. Fortunately, the monitor speaker informed me that the system was in fact doing something and shortly the DOS menu appeared.

The XF551 is the same gray color as Atari XE computers. It is considerably smaller than the 1050—about 2 3/4 × 7 1/4 × 11 1/2 inches—and weighs in at six pounds. A tiny green "busy" light is just to the left of the door lever. Setting the drive number is done with a tiny pair of switches—similar to printer DIP switches—

which protrude slightly from the rear cover. The top of the cabinet has two rows of vents for cooling.

The power switch has been moved to the *right* rear corner of the cabinet and there's no pilot light on the front panel. (I left my XF551 turned on for days because of this—with no apparent damage.) While on standby, the XF551 uses about as much power as two night-lights. It uses the same external power supply as the 810 and 1050 and has the usual two Atari nonstandard serial ports for daisy-chaining.

Inside (yes, I voided my warranty), we find a 6507 microprocessor, a drive controller chip, a DC power supply and a drive mechanism with industry-standard power and controller connections! Visions of slipping in a 3.5 inch microfloppy danced before my eyes when I saw this. (*An article by Robert Woolley in the January 1988 San Leandro Computer Club Journal discusses how to do this.*—ANTIC ED)

Atari DOS 2.0 and 2.5 work as you'd expect with a 1050—single or enhanced density, 90K or 130K of storage, etc. But wait! Side B of my "flippy" wouldn't format. Some investigation revealed that although I could boot and load from the back side of a disk, just as with a 1050, the XF551 won't format or write to it because the index hole (the small hole near the center of the disk) was now on the wrong side.

DOS XL from ICD/OSS, SuperDOS (reviewed in this issue) and SmartDOS can all format single-sided, double-density disks in the XF551. However, DOS XL took a lot of coaxing and I still have trouble duplicating the exact steps required to do it. Even more frustrating is the fact that DOS XL'S CONFIG utility tells me that the XF551 has two sides, but the DOS XL command processor only allows access to 180K.

WHAT WORKS, WHAT DOESN'T

Most of the software I own, including Speedscript 3.0 and the Antic Spell Checker, worked normally when transferred to a double-sided, double-density disk. Some programs will do strange things if you try to format a disk or get a directory when using any DOS not found on the original disks. Turbo BASIC works exactly as it should in all densities.

The only way to be sure if a specific program will work properly on a double-sided, double-density disk is to try it. My system has an 810 installed as drive 2 and the XF551 is drive 1. The only problems I encountered arose from trying to change densities within an application such as a word processor or spreadsheet, or from using a copy-protected program under a different DOS.

HOW FAST IS IT?

The XF551 isn't much faster than the 1050, using the operating systems currently available. The forthcoming ADOS is promised to support rapid interlaced formatting and high-speed loads and saves. Since ADOS isn't available at this time, I ran some tests with SmartDOS (Astra Systems) to compare the three Atari drives. See *Figure 1.*

The times in this test were determined using the system clock. All files were written to and read from the same disk, using the same filename. The files were deleted before testing another drive, and the same computer was used each time.

Some quick figuring reveals that on a standard 62-sector picture file (8K), the XF551 is about 23% faster than the 810 and about 12.5% faster than the 1050. For longer files, the improvement over the 810 increases, achieving a 60% advantage at 32K during a write-without-verify operation. However, I found that the gap between the XF551 and the 1050 actually decreased with larger files.

FIGURE 1: COMPARATIVE DRIVE SPEEDS

Drive Type	Format SS/SD	Write 8K File		Read 8K File	Write 32K File		Read 32K File
		Verify ON	OFF		Verify ON	OFF	
XF551	0:26	0:22	0:09	0:07	1:23	0:31	0:29
1050	0:36	0:24	0:10	0:08	1:27	0:33	0:31
810	0:35	0:27	0:14	0:08	1:44	0:50	0:31

BOTTOM LINES

Here are a couple of things to watch out for, as you enter the contemporary world of double-sided disk drives:

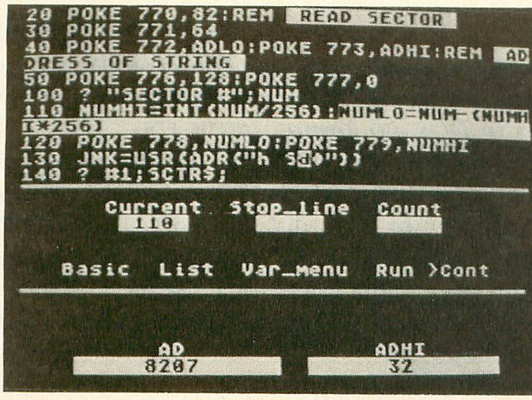
1. Always put the cardboard head protector in the drive and close the door before moving the XF551. Double-sided drives are considerably more sensitive to shock and vibration damage than the 1050 and 810.

2. Never remove a disk while the busy light is on. This is especially true with double-density disks. While it *may* not damage the disk and won't hurt the drive, sometimes you won't be able to access a double-sided, double-density disk again without rebooting the system. One possible alternative is to always boot from a single-density copy of your DOS disk, then use the DOS Menu to reconfigure the drive. With any luck, if you need to re-enter DOS after an unintentional density change, this method will make it possible.

The XF551 is a modern, rugged drive that delivers good value and reliable operation. I can recommend it without hesitation to any Atari 8-bit owner who wants economical price and compatibility with standards already established. ■

Rich Tietjens is a U.S. Army Staff Sergeant stationed in Europe, where he made his early XF551 purchase.

ATARI XF551 DISK DRIVE
Atari Corp.
1196 Borregas Avenue
Sunnyvale, CA 94086
(408) 745-2000
$199.95
CIRCLE **212** ON READER SERVICE CARD



POWER TOOLS FOR 8-BIT ATARI
continued from page 38

variables carefully, you can pair them up usefully. But that's not very flexible or easy, and a debugger is supposed to make things easy.

Other weak spots are minor: The joystick response is a bit sluggish. I would like a few more lines for the listing, because the menu takes too much space. And the program always returns to the first line when you go to the list mode.

BASIC View takes up 12K at the top of memory. If you are reasonably attentive with your custom display lists, character sets and POKES, you should find no conflicts in any program that fits. BASIC View will help you understand what your program is doing and find where it is going astray. Since it makes the program flow so clear, it's also a great teaching aid for my programming classes.—CHARLES CHERRY

$19.95, 48K disk, AP0192. The Catalog, 544 Second Street, San Francisco, CA 94107. (800) 234-7001.

QUICK CODE

QuickCode is an amazing collection of macros for the MAC/65 assembler. It turns Assembly Language into a high level, BASIC-like language. Of course, it retains the speed, flexibility and compactness of assembly code. The manual claims that you don't need to know Assembly Language, just learn to operate MAC/65 and program as you would in BASIC. That strikes me as an exaggeration, but not a very big one.

Program control macros include GOTO, GOSUB, RETURN, WAIT, TRAP and multi-line IF-THEN-ELSE-ENDIF, as well as the multi-choice CASE, ON-GOTO and ON-GOSUB. Loops include FOR-NEXT, DO-OD, LOOP-ENDLOOP and WHILE-ENDWHILE.

QuickCode has full variable support, including one and two dimension numerical and string arrays. It also has a special high-speed "indexed string" data type. Macros exist to transfer data from one type to another.

I/O macros include OPEN, CLOSE, NOTE, POINT, PRINT, INPUT, PUT, GET, BPUT and BGET. DOS commands include FORMAT, DELETE, RENAME, LOCK and UNLOCK.

Graphics commands include GRAPHICS, SETCOLOR, COLOR, POSITION, LOCATE, PLOT, DRAWTO and FILL.

QuickCode has better Player/Missile Graphics support than any other language, even Advan BASIC. It also has support for Vertical Blank Interrupts.

There are even more goodies here, but I'll leave them for you to discover. The only downsides to this package are lack of support for floating point math (it only supports integers—see the Floating Point Package below) and a manual which is organized alphabetically instead of grouping commands by function. For instance, if you don't know that REPORT resets TRAP, how can you find it?

All in all, this is a fabulous package. I wish it had been available years ago. It would have saved me weeks of coding.—CHARLES CHERRY

$34.95, 48K disk, requires MAC/65. Stardust Software, P.O. Box 33192, Indianapolis, IN 46203. (317) 788-7403.
CIRCLE **239** ON READER SERVICE CARD

FLOATING POINT PACKAGE

The Floating Point Package is another collection of macros for the MAC/65 assembler that provides easy access to floating point mathematics with BASIC-like commands.

Functions supported include addition, subtraction, multiplication, division, logarithms (base e and base 10), exponentiation, inverse logs, array management, input, print, compare, and branch and floating point-integer-ASCII conversions. It also has a trigonometry library for sine, cosine, tangent, cotangent, secant, cosecant and radian-degree conversions.

If, like me, you have avoided using Assembly Language for programs which required floating point, this is a salvation. Those floating point programs usually need the increased speed of assembly language more than any others. While you may never use all of the functions, you'll rejoice at the simplicity of effortless addition and subtraction.

The Floating Point Package is a great companion to QuickCode (above). Together they form the fastest, most powerful high level language available on the Atari. But you'll want a RAMdisk to speed assembly of these monsters.

The Floating Point Package comes bundled with Extended DDT, which I think is the best debugger for the Atari. The amount of information it gives is overwhelming. Together, these two are the best value ever offered to Assembly Language programmers (with the possible exception of MAC/65 itself).—CHARLES CHERRY

$19.95, 48K disk, requires MAC/65 *cartridge*, AP0189. The Catalog, 544 Second Street, San Francisco, CA 94107. (800) 234-7001.

DOS 4.0

DOS 4.0 (QDOS) is an easy-to-use, full-featured, well-documented disk operating system. It supports all of the same XIO and direct DOS commands under BASIC as DOS 2. While the QDOS file format is not compatible with DOS

continued on next page

2.0, the disk has programs to convert both DOS 2 and DOS 3 files to QDOS. You can't convert *to* DOS 2, however. (*For this reason,* ***Antic*** *cannot accept programs or articles in DOS 4.0 format.*—ANTIC ED)

The initial menu displays the first 16 .COM files—including Disk Utilities (DISKUTIL)—and the options to run a cartridge or get a disk directory. The DISKUTIL screen is similar to the DOS 2 menu, but you can't redirect a disk directory to the printer or a disk file, and there are three new commands: Configure Drive, Merge DCF, and Identify Mode.

Configure Drive lets you set up your drives individually as to density and how many sides. (All configurations work fine on Atari's new XF551 drive.) Merge DCF lets you add new types of drives to your system. And Identify Mode determines the format of the disk in the drive.

The QDOS Duplicate File function lets you copy between disks of different densities. And it can copy as many files as available memory permits in one pass. However, once erased, a QDOS file can't be recovered.

With one utility, GOBASIC, you can automatically LOAD and RUN a BASIC program, or create a file which will do so. Another utility, REDIRECT, changes the logical drive number of any disk drive you specify. Also included is a 100-screen online manual (about 26 printed pages) which alone is worth the cost of QDOS.—RICH TIETJENS■

$10, 48K disk, PD067. The Catalog, 544 Second Street, San Francisco, CA 94107. (415) 957-0886.

Super CZ

Real-time MIDI special effects

By JIM PIERSON-PERRY

Mary Rhomberg Peloquin

The **Casio CZ** series is among the most popular brands of synthesizers. Along with its comparatively low price, a major reason for the CZ's success is its ability to play four independent voices at once under MIDI control. This multi-voice capability is used effectively by such programs as Activision's Music Studio. But these effects cannot be achieved directly from the keyboard.

Wouldn't it be great to set up the CZ so you could play all four voices together, each in its own section of the keyboard? Or how about playing multiple voices overlaid to make powerful lead synth sounds? The MIDI literature says it can't be done. Well, maybe not normally, but your ST can make it easy to add these super effects to your CZ playing.

My two programs show off real-time MIDI data processing by bringing live performance multi-voice capabilities to the Casio CZ synthesizers. CZ Split plays as many as four independent voices, each in its own keyboard zone. CZ Overlay plays as many as three independent voices

continued on next page

Type-In Software

overlaid on notes played by a base voice, and the overlay voices can be set to create a chord tracking effect.

The programs are only simple starting examples of what can be done with dedicated real-time MIDI data processing. Even so, the effects are nice and give additional punch to your playing. MIDI programming isn't difficult, so how about additional effects like echoing on multiple voices, or microtonal scales? Together, the ST and CZ make a dynamite duo for music and the fun is just starting.

Although my programs were coded with the CZ-101/1000 in mind, they should be compatible with the entire CZ synthesizer line. The only caveat is in patch program selection. I used information from *The Guidebook for MIDI* (free from Casio), which details patch program selection commands for the CZ-101/1000/3000/5000. I'm afraid that CZ-1 or CZ-230S owners will have to experiment to find the right values.

GETTING STARTED

Listing 1, CZSPLIT, and Listing 2, CZOVERLY were both written in GFA BASIC. The actual programs are .PRG files generated by the GFA BASIC Compiler. I deliberately did not go for flashy special GEM effects. The "vanilla" BASIC code should be easy to port to other BASIC dialects.

Two MIDI cables are required for running these programs. One cable connects the Casio's MIDI Out port to the ST's MIDI In port. The second cable connects the Casio's MIDI In port to the ST's MIDI Out port.

You might first want to pull out your CZ manual for a quick refresher on the mono mode (multi-voice operation). You might also want to look over Tom Jeffries' article "The Ins, Outs and Thrus of MIDI" from the Spring 1987 issue of START Magazine.

You need to know that the base MIDI channel is what your CZ synthesizer is set on to receive or transmit data. Although you could use any channel from 1 to 16, channel assignments above 12 will not work correctly because the CZ needs four adjacent channels for proper separation of its four-voice mono mode.

You should also understand that the patch program selection is where you specify the particular sound (timbre) to be associated with each of the playing voices—for example, trumpet, organ, snare drum. To specify a sound, you need to locate it by source (preset, internal, or cartridge), bank (where appropriate) and number. If you make a mistake, run the program again—you can't hurt the CZ or ST. Selecting sounds from the cartridge bank when no cartridges are installed will default into the preset bank.

CZ SPLIT

With CZ Split, you specify split points for as many as four separate zones on the CZ keyboard. Each zone controls its own voice (sound).

Zone 1 starts at the right end of the keyboard (MIDI key number 96). Initially its split point is set at the far left of the keyboard (MIDI key number 36) so that all keys fall within Zone 1. If you specify a split point, say middle

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MIDI Resources

Guide for ST electronic musicians

By Jim Pierson-Perry

The built-in MIDI ports on the Atari ST are your keys to entering a world of musical adventure beyond the wildest dreams of Beethoven or even Jimi Hendrix. MIDI (Musical Instrument Digital Interface) is a hardware and software protocol that links computers with electronic musical instruments and sound processing devices. With MIDI, you can set up a system to meet any musical need—from a simple computer-controlled player piano to a professional recording studio.

And it's not just for keyboard players: the range of MIDI instruments has grown to include drums, woodwinds, brass and guitars. By the way, MIDI is not just for the ST crowd. Hybrid Arts sells an interface (MIDI Mate) for Atari 8-bit computers.

MIDI has a specialized vocabulary and equipment, but numerous sources of help are available to guide new users (and even experienced MIDIots). This guide contains some of the best help sources I've found to answer my questions and stay abreast of current developments. The resources range from books and magazines to dedicated bulletin board systems and organizations. Addresses and phone numbers for these resources are provided at the end of this article.

BOOKS

The single best book for an overview of MIDI and its applications is "Music Through MIDI" by Michael Boom ($19.95, Microsoft Press). This thoroughly covers the MIDI language and main types of equipment. Four detailed interviews with MIDI users provide an excellent understanding of how MIDI fills a variety of musical needs. As a bonus, the author is an excellent writer.

A more technical but equally good book is "The MIDI Book" by Steve De Furia ($14.95, Hal Leonard Publishing). This gets into more detail on setting up MIDI systems of varying sizes and functions. De Furia has written several follow-up books in this series: "MIDI Resource" ($17.95), addressing the

C (MIDI key number 60), then all notes from the right, down to and including middle C, fall into Zone 1 and are played using its selected voice. Notes below middle C fall into the newly created Zone 2 and are played using its voice.

The maximum is three split points. Make sure that the split points you set are all sequentially lower down on the keyboard—point 1> point 2> point 3. Otherwise the zone decoding logic may not assign your notes as you expect.

When you run CZSPLIT.PRG, Listing 1, you're first asked to enter the MIDI channel for your CZ, then the number of keyboard zones (up to four). You are then asked for the split points to define the keyboard zones from right to left. Let's use MIDI key values of 72 (C above middle C), 60 (middle C) and 48 (C below middle C). This gives us four zones of one octave each.

The final step of setup is to specify the patch program for each zone. This is done by entering the source (preset, internal, or cartridge) and number (1 to 16) for each voice in turn. For this test, let's use preset bank program numbers 7, 2, 14 and 8—flute, trumpet, accordion and bass.

The program then calls a subroutine to put the CZ into mono mode and set up the desired patch programs with their respective voices. A screen prompt is given when all is ready. Now all notes played on the CZ go first to the ST, which determines the voice, then back to the CZ for sound synthesis. All sounds are from MIDI input. The keyboard is divorced from the sound generation circuits by using the Local Off MIDI command.

By the way, the CZ's pitchbend does work, but only in Zone 1. To exit the program, press the Portamento On/Off button on the CZ keyboard. This halts the program, resets the Portamento button and puts the CZ back into poly mode with the keyboard back online to the sound circuits (Local On MIDI command).

CZ OVERLAY

CZ Overlay sets up four voices, each with a different sound, and stacks (overlays) them to give a strong, punchy lead synth sound. In addition, the three overlay voices can form a four-note chord that will track the base voice (voice 1) up and down the keyboard to increase the power of the effect.

When you run CZOVERLY.PRG, Listing 2, the prompts first ask for the MIDI channel for your CZ, the model of your CZ synth and the number of overlay voices. You always have the base voice (voice 1) and can have up to three independent overlay voices.

Now enter an offset value for each overlay voice, specified in MIDI key numbers. This allows voice 2 to play up a fifth (+7 MIDI keys), down an octave (−12 MIDI keys), or whatever you like. Using this feature with all three overlay voices gives chord tracking of the base voice for impressive power sounds—even though you are just pressing one key at a time. Let's set overlay voice 1 to offset at 7 (up a fifth), voice 2 offset at 12 (up an octave) and

continued on next page

MIDI standard; "MIDI Implementation Book" ($19.95), regarding MIDI implementation on various instruments; and "Secrets of Analog and Digital Synthesis" ($14.95), techniques for creating sounds with synthesizers

MAGAZINES

Several magazines are available that deal with MIDI. The most authoritative is Keyboard (GPI Publications) which regularly features application articles, current events, educational columns and comprehensive reviews of equipment and software. Electronic Musician (Mix Publications) tends to focus more on do-it-yourself projects, both programming and equipment. Also worth checking are Music Technology (Music Maker Publications) and Music, Computers & Software (Keyboards, Computers & Software, Inc.). The latter publishes a yearly buyers guide to MIDI products.

There are several magazines aimed at particular instrument brands. These include Aftertouch (in Northridge, California) for Yamaha equipment, Cozmosynth (B. B. Publications) for Casio, and Transoniq Hacker (in Portland, Oregon) for Ensoniq. All provide information on new products, equipment application notes and patches for creating new sounds or effects. And for Atari users, Antic and its sister publication START regularly feature articles on MIDI products and software, as well as publishing original MIDI programs.

BBS

For up-to-the-minute information or quick answers to problems, nothing beats the telecommunications grapevine. This is a great source of hands-on experience to tap before investing in new equipment or software. The user base ranges from novices to professional MIDI programmers. Quite often users' software questions will be answered by the original programmers.

Of the national information services, CompuServe and GEnie have the most active MIDI forums. Common to both are large libraries of files containing patches, prerecorded music, reviews and tutorials.

The best dedicated BBS is Midwest MIDI, the home of both MIDI-Net and the International Electronic Musicians User Group (IEMUG). MIDI-Net is an echo mail conference dedicated to MIDI that operates throughout the United States and in Canada and Europe. Callers log on via local BBS nodes which all feed into a central message bank. Check with Midwest MIDI for the location of the nearest node to you. Besides the message base, there are many music and information files in its download library.

Other good boards to try are East Coast MIDI, MIDI World Network

continued on next page

voice 3 offset at −12 (down an octave).

Finally, choose the patch programs to give each voice its own distinctive sound. Let's use the preset bank for all four with voice 1 (base voice) as program number 2 (trumpet), voice 2 as number 7 (flute), voice 3 as 14 (accordion) and voice 4 as number 8 (bass). The ST then dives into the mono mode setup subroutine and flashes an on-screen message to start playing.

Play a solo on the CZ keyboard and listen to the added depth and dynamics you get from the overlay effect. The pitchbend effect also can be used to spice up the base voice. As with CZ Split, when you're done just press the Portamento On/Off button on the CZ keyboard.

HOW THEY WORK

The key to these programs is the MIDI command for Local Off. This divorces the keyboard from the synthesizer sound generation circuitry. Pressing keys or controls sends the appropriate commands to the MIDI Out port, but only data received at the MIDI In port will cause sound to be produced. If we put an ST in the middle of this loop, we can monitor the MIDI commands sent and either modify or pass them on unchanged to have the CZ play in real time.

For the programs given here, all we are interested in is Note On MIDI events—all other commands and data are immediately sent back to the CZ. For the split keyboard effect, when a Note On command is intercepted, its associated MIDI key value data byte is used to flag whichever voice will be sounded. The Note On command is altered to change the channel, according to the designated split points, and passed on to the CZ for play.

The overlay effect is even simpler. Each Note On event detected is sent back on its base channel as well as on all desired overlay channels. The MIDI key data byte is changed for each channel to reflect the desired offset for chord tracking.

The pitchbend effect always operates on the base channel while in real-time play. That is why I set the split zones to run from right to left—most players I know use pitchbend on the upper keys rather than the bass parts. It would be nice to be able to assign the effect to any voice, and I'd love to hear from anyone who can do it.

1/230S FIX

Earlier I said that those with a CZ-1 or CZ-230S would need to do some extra work to get the expected patch program changes assigned. At the bottom of the MIDI implementation charts for your synthesizer is a section on program changes that lists the program numbers associated with the various patch banks. Use these numbering assignments when asked for your patch program numbers, but start numbering from 1 instead of 0.

If the CZ tones don't sound right during play, pressing the Solo button on the CZ keyboard twice should clear it up. Apparently there's a bug in some of the earlier CZ ROMs that can be corrected with a firmware update. This is pretty well documented, and you can contact your Casio dealer for further information. ■

FOR MORE ARTICLES LIKE THIS, CIRCLE **204** ON READER SERVICE CARD. *Listing on page 73–page 75*

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and TACE BBS. At the professional level is PAN, the Performing Artists Network serving all facets of the international music industry. This service, however, has a $150 sign-up fee plus hourly charges.

ORGANIZATIONS

Among the better known national users groups are the International MIDI Association (IMA), International Electronic Musicians User Group (IEMUG) and Canadian MIDI User Group (CMUG). All feature regular newsletters, discount pricing on selected products and services, and a large user base to draw on for help.

At the local level, many cities have MIDI users groups, typically centered around music equipment stores, that provide regular product demonstrations and "how to" sessions. Now that Atari has aggressively committed itself to the MIDI market, you should start seeing a lot more of our favorite computers at these stores. ■

RESOURCE LIST

**Microsoft Press, 16011 NE 36th Way,
Box 97017, Redmond, WA 98073.**

Hal Leonard Publishing Corp., P.O. Box 13819, Milwaukee, WI 53213.

**GPI Publications, 20085 Stevens Creek,
Cupertino, CA 95014.**

**Mix Publications, Inc., 6400 Hollis Street, #12
Emeryville, CA 94608.**

**Music Maker Publications, Inc.,
7361 Topanga Canyon Blvd.,
Canoga Park, CA 91303.**

**Keyboards, Computers & Software, Inc.,
190 East Main Street, Huntington, NY 11743.**

**Aftertouch, P.O. Box 7938,
Northridge, CA 91327.**

**B.B. Publications,
353 Corbett Canyon Road,
Arroyo Grande, CA 93420.**

**Transoniq Hacker,
5047 SW 26th Drive,
Portland, OR 97201.**

**Antic Publications, Inc.,
544 Second Street,
San Francisco, CA 94107. (415) 957-0886.**

Midwest MIDI BBS, (405) 733-3102.

East Coast MIDI, (516) 928-4986.

continued on page 57

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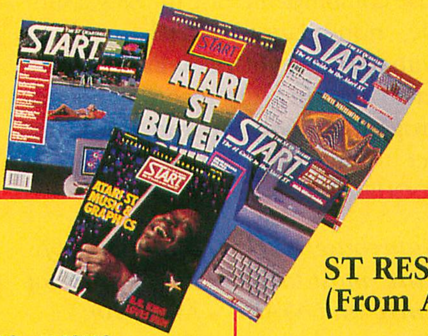

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ST Toolbox

Smooth Talker, Superbase Personal

SUPERBASE PERSONAL

Superbase Personal, Version 1.026 is a fully relational database manager that's very powerful, but it's still easy to learn and use. This high-quality British import has a well-designed GEM interface that makes the normally complex relational capabilities a piece of cake to set up and use.

The manual was written for PC users operating under GEM, but it has a section for ST users explaining the differences. You really must read the manual thoroughly, but it's very clear, with excellent layout and tutorials. By the time you finish the manual, you'll be well-prepared to use Superbase.

Superbase runs in high resolution or medium resolution. The menu bar on the main screen controls your basic choices. DESK lets you access your desk accessories. The PROJECT menu contains all selections needed for working with files and their indexes, as well as report formats (called "Query" by the British authors). The RECORD menu lets you add, change and delete records within open files.

The PROCESS menu covers all main processing requirements including search, sort, report, update, print, delete, import and export. The SET menu contains several options for modifying Superbase operations such as printing to screen or printer and setting paging, control number and date formats.

You can examine your data in three views. Record View simply displays one record at a time on your screen, one field per line. Form View also displays your records one at a time, but in the screen format you choose—very similar to Broderbund's SynFile+ on the 8-bit Atari. Table View displays your records in columns, much like a spreadsheet.

The SYSTEM menu lets you set up printer options, get a directory list, change directories, display the status of system files or open files, list a text file, or reorganize a database file.

At the bottom of the main screen is the Control Panel, set like a VCR with buttons for Pause, Stop, Fast Forward and Rewind, as well as Select Current, First or Last Record. Another button lets you specify a key to look up, and the Filter Button lets you set up complex search and selection logic.

Another powerful feature is the External File System, which lets you keep a database containing ASCII text files and graphics images from popular programs such as NEOchrome and DEGAS.

In one affordable package, Superbase combines the ease of using a simple, non-relational database along with the power of a genuine relational database. I heartily recommend this program to everyone from the beginner to the business user.—STEPHEN ROQUEMORE

(*Superbase is the ST database software most-used by the editors of* ***Antic*** *and START.* —ANTIC ED)

$149.95, color or monochrome. Progressive Peripherals & Software, 464 Kalamath Street, Denver, CO 80204. (303) 825-4144.

CIRCLE **206** ON READER SERVICE CARD

SMOOTH TALKER

My first experience with software that produces computer speech was S.A.M. (no longer available) for the Atari 8-bit machines. S.A.M. produced decent speech. But it pushed the 6502 microprocessor to its limits, so graphics had to be turned off to preserve sound quality. **Smooth Talker** produces speech on your Atari ST. It's strictly for fun because the speech produced cannot be used in your own programs.

Smooth Talker starts up with a rudimentary text-editing window where you type any text you want the program to say. The editor lets you highlight text and use Cut, Paste and Copy. However, the arrow keys are disabled, as is key repeat, which makes editing far more work than it should be. Furthermore, the key repeat is not re-enabled when you quit the program, so you can't use key repeat again unless you reboot. A non-GEM set of menus lets you load and save files created with the editor. Other options will speak all the text, only the highlighted section, each word as it is typed in or each letter as you type it in.

After text has been entered, you can adjust pitch, tone, volume, speed and male or female gender. These options can be entered directly into the text using a special notation, or you can bring up a window and use the mouse pointer to click on the appropriate buttons to make your choices. By highlighting a particular section of text, the settings can be applied to just that section. Thus, there can be multiple settings within the text, simulating several different voices. A whole coordinated conversation can be set up.

Smooth Talker has an excellent English-to-Phonetics converter. Phonetics uses a special notation to indicate how a word will sound and the best-sounding speech programs require that phonemes (building-blocks of speech) be entered instead of English text. Phonetics, while not especially difficult, must be learned and experimented with, so most casual users won't bother. Smooth Talker lets

you enter standard English text, including numbers and abbreviations (Dr., Mr., etc.), and converts this text to speech surprisingly well.

Punctuation is used to indicate inflection. You *can* enter phonemes if you want to, and the manual includes a brief section on English phonemes. You can also call up a phonetics window on the screen, and see what your text looks like converted to phonemes.

Smooth Talker supports multiple dictionaries. If a word is mispronounced, (such as chihuahua, which comes out sounding like "chi-hew-a-hew-a") you can enter the spelling in the dictionary and then enter how the word is supposed to be pronounced. This can be done in phonetics (CHAXwAAwAA) or in deliberately misspelled english (Chi wa wa). From then on, whenever the word is encountered, your pronunciation will override the built-in rules. This feature permits you to build up a dictionary of abbreviations, since you can redefine pronounciation of abbreviations.

The proof of the pudding is obviously how good the speech sounds. It is certainly easy to tell that a computer is talking, but careful adjustment of the parameters (especially volume and pitch) provides speech which is clear and easy to understand. The 68000 microprocessor is still near its limits—moving the mouse pointer steals enough of its capacity to seriously impair the quality of the speech produced.

Overall, Smooth Talker is fun to play with, but not very useful. The shortcomings of the editor are annoying, especially since the program does not seem to be able to load anything but its own files. (I tried 1st Word files, but they didn't work.) But if what you want to do is wow your friends with the "talking computer," then Smooth Talker should fill the bill very nicely.—DAVID PLOTKIN ■

$49.95, color or monochrome. (First Byte) Marketed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. (415) 571-7991.

CIRCLE **207** ON READER SERVICE CARD

RESOURCE LIST
continued from page 54

MIDI World Network, (213) 826-4288.

TACE BBS, (817) 778-2506.

PAN, (215) 489-4640 (voice).

International MIDI Association (IMA),
12439 Magnolia Blvd.,
Suite 104, North Hollywood, CA 91607.

International Electronic Musicians User Group (IEMUG, c/o MidWest MIDI Consultants, Inc.,
P.O. Box 30995, Midwest City, OK 73140.

Canadian MIDI User Group (CMUG),
c/o Eric Barager,
Box 1043, Belleville, Ontario, Canada K8N 5B6.

CIRCLE **015** ON READER SERVICE CARD

ST New Products

By GREGG PEARLMAN, *Antic Assistant Editor*

CATCH THE WAVE

GenWave/12 is a mouse-driven, generic waveform editing system and sample translator for your 1040ST or Mega that supports several popular 12-bit samplers. You can transfer sound samples via MIDI from the sampler to the computer for high-resolution waveform display, editing and digital signal processing. GenWave/12 supports Emu Emax and SP-1200, Sequential P-2000/2, Akai S900 and other instruments conforming to the MIDI Sample Dump Standard.

Features include a visual looping editor, variable crossfade looping and freehand waveform drawing. Digital processing elements include digital equalization and enveloping, gain change and unlimited cut-and-paste splicing.

$299. Drumware, 12077 Wilshire Blvd., Suite 515, Los Angeles, CA 90025. (213) 478-3956. Requires 1Mb.

CIRCLE **225** ON READER SERVICE CARD

B/W COLOR

With E. Arthur Brown Co.'s new **composite cable** ($24.95), *any* ST can use composite video monitors. The cable connects to the standard ST monitor port and converts the RGB signal to gray-scaled low-resolution and medium-resolution composite output—resulting in clear gray-scaled black and white images on color and monochrome composite monitors.

Developed by Hypertek/Silicon Springs, a Canadian firm, **ST OmniRes** ($34.95) lets you run "color only" software on your monochrome monitor—and has a utility for displaying high-resolution on color monitors. This product is also available from Brown.

Because of the increase in RAM chip costs, Brown's 1 to 4Mb **Solderless RAM II** upgrades are now selling for $249.95 for a fully socketed board, but empty boards will remain at $169. Free RAMdisk and spooler software is included. Installing RAM II is simple: just remove your ST's MMU chip from its socket, plug it in to the new MMU Adaptor Board, then plug the Adaptor Board back into the MMU socket. Then do the same with your shifter chip.

E. Arthur Brown Co., 3404 Pawnee Drive, Alexandria, MN 56308. (612) 762-8847, (612) 763-6393.

CIRCLE **228** ON READER SERVICE CARD

BE KIND—REWIND

Attention, video store managers: **Fast Forward** ($299) and **Fast Forward Advanced** ($900) video store management software from Turning Point Software, will help you keep your business under control. The capabilities of this software range from a single-user or single-terminal system to a multiuser/networking system with barcode reader capability and more. Each package can handle movie reservations, rentals and purchase, as well as a customer base. Fast Forward Advanced has networking capabilities, costing $500 for two more terminals and $100 for each terminal after that.

Fast Forward features include an easy-to-use calendar for movie reservations, allowing movies to be booked well in advance; simple data management techniques for adding movies to your inventory; a security system; membership maintenance capabilities; straightforward invoicing; customizable reports and options for full networking.

Barcode software costs $100 for a single user, $150 for a networking system; modem drivers cost $200 per location; and a demo version of Fast Forward costs $25—it's fully functional but has limited record capacity.

Turning Point Software, 801 Mohawk Road West, Hamilton, Ontario, L9C 6C2 Canada; 2201 Pine Avenue, Niagara Falls, NY 14301. (416) 575-2867.

CIRCLE **235** ON READER SERVICE CARD

PASSPORT TO MIDI

In version 2.0 of **Master Tracks Pro** ($349.95), the Punch In and Punch Out features offer a dialog window to set auto-punch in/out points for your music. And a new Conductor Track Data Window graphically reflects changes made to the conductor track from the change window or with the pencil and eraser tools. The Elapsed Time indicator, Quantize window and measure insertion have been improved as well.

Master Tracks Jr. $(129.95), an entry-level sequencer for the ST, provides 64 tracks for real-time or step-time recording, a MIDI song pointer, 100K-plus note capacity (with 1Mb), auto-punch in/out, step input, MIDI files and more.

Passport Designs Inc., 625 Miramontes Street, Half Moon Bay, CA 94019. (415) 726-0280.

CIRCLE **226** ON READER SERVICE CARD

SAVED! AGAIN

In version 2 of HiSoft's useful utility package, **Saved!**, the RAMdisk can now survive a machine reset, and you can copy files or whole directories into it automatically upon booting. You can use mouse or keyboard to access all popular commands, as well as set the system path so that you can put your applications on the RAMdisk, saving your floppies for data. Saved! also has UnDel, a utility for recovering deleted files.

About $50 in British pounds. (Updates cost about $8.) HiSoft, The Old School, Greenfield, Bedford, UK MK45 5DE. (0525) 718181.

CIRCLE **224** ON READER SERVICE CARD

SOFTWARE BLITTER

For text applications, such as word processing, why knock yourself out installing a blitter chip when you can use **Turbo ST**, Softrek's "software blitter"? Installation takes about two seconds; after you load your favorite word processor, program editor, database, etc., you'll see a dramatic increase in speed—in ST Writer, for example, paging speed is increased 108%, and scrolling speed is increased 42%.

$49.95. Softrek, 2628 Martz Court, Orlando, FL 32817. (305) 657-4611.

CIRCLE **229** ON READER SERVICE CARD

SENTRY

If you have a hard disk, whenever your system bombs, reports a fatal error or just generally gives you grief, chances are that some data has been damaged. That's where **Hard Disk Sentry** comes in. During the diagnostic process, Sentry performs tests, reports which files are in jeopardy and verifies if the subdirectories are linked properly. Then it fixes as many errors as it can.

$49.95. Beckemeyer Development Tools, 478 Santa Clara Avenue, Oakland, CA 94610. (415) 452-1129.

CIRCLE **231** ON READER SERVICE CARD

MINDSCAPE GALORE

It's probably best to pay your newspaper subscriptions by mail. Otherwise you'll be disturbed by a **Paperboy** ($49.95) every month—and they only drop by during dinner and/or "Star Trek." In this arcade classic, your job is to deliver the morning

paper to your subscribers without incident, except for breaking the occasional window or otherwise wreaking havoc as the mood suits you—just like real life.

Remember how in the film **Indiana Jones and the Temple of Doom** ($49.95) the audience had no chance to relax between the horrible events that befell Indy? Same here. And you may not have the luck the professor did in his encounters with various hazards—which are still pretty small potatoes compared to what awaits you in the Temple.

Impact ($39.95) is part Pong, part Breakout and part Araknoid. While you deflect the bouncing ball and knock down the barriers, you'll be destroying alien objects and catching falling tokens to win special weapons and bonus points. **Road Runner** ($49.95) is basically like the cartoons: it's you against Wile E. Coyote, Super Genius. If he catches you, you're through. In the cartoons, the Road Runner always wins and the coyote always hits the ground astoundingly hard. In the game, the Road Runner's odds aren't so hot. Meep, meep.

Indoor Sports ($49.95) features simulations of bowling, darts, air hockey and ping-pong. Each game allows individualized playing styles and has colorful, realistic graphics. In **Superstar Ice Hockey** ($49.95) you make the trades, recruit players from the minors, conduct training camps, make line changes and call strategies. You'll compete with 19 other teams on your way to the Stanley Cup. The program can track as many as nine seasons.

The following programs are from Thunder Mountain, Mindscape's line of discount software. All titles are $14.95:

Fly above three detailed planets, vaporizing all in your path, in **Leviathan**, a space shoot-em-up featuring diagonal scrolling landscapes and true perspective graphics. **Top Gun** puts you at the controls of a somewhat less advanced vessel, an F-14 Tomcat, as you take on another player or the computer.

In **Winter Challenge**, up to six players go for the gold in the ski jump, downhill racing, bobsled, giant slalom and biathlon, while in **Tau Ceti**, a 360-degree scanner, four-way view screen and infrared night sights are part of the unique graphics in this space adventure.

Tai-Pan, based on the highly-acclaimed James Clavell novel combines trading skills, strategy and combat action as you seek your fortune. **Wizball** features dazzling graphics as you discover the secret powers and controls of the Wizball, restore the colors to Wizworld and defeat the evil Zark.

Mindscape Inc., 3444 Dundee Road, Northbrook, IL 60062. (800) 221-9884, (312) 480-7667.

CIRCLE **188** ON READER SERVICE CARD

New ST product notices are compiled from information provided by the products' manufacturers. ***Antic*** *assumes no responsibility for the accuracy of these notices or the performance of the product.*

ST Games Gallery

Pinball Wizard, Airball, President Elect, Tanglewood, Diamond Mike

PINBALL WIZARD

Accolade's **Pinball Wizard** is the best pinball construction simulation

I've seen for any computer. Bright colors are part of the fun of arcade pinball, and Pinball Wizard captures that flavor to the hilt. There are a few set-ups that can be played immediately to learn the mechanics of the game, but the real fun here is creating your own, saving them to a blank disk and then amazing your friends with your creativity.

The game has a parts box containing almost any kind of obstacle you'd want to put on the playfield. A detailed drawing utility, which even includes a magnification option, will give your finished product as much polish as you have patience for. Sections of the construction package help control scoring, bonuses, slope, tilt, speed, elasticity and the number of balls per game.

The games can be played with the keyboard or the mouse, but for real pinball addicts, the keyboard is the only real choice. The finished products will play more like real pinball machines than anything you've ever experienced on computers.—RICK TEVERBAUGH

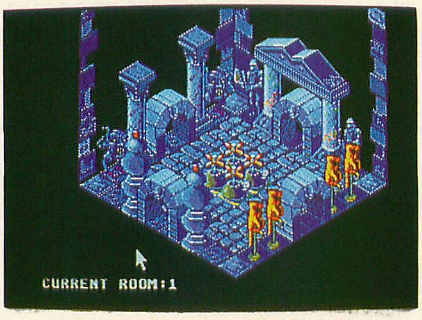
$34.95, color. Accolade, 20813 Stevens Creek Blvd., Cupertino, CA 95014. (408) 446-5757.

CIRCLE 213 ON READER SERVICE CARD

AIRBALL, AIRBALL CONSTRUCTION SET

MicroDeal's **Airball** looks to be a clever, detailed and complex challenge in the growing line of ball-and-maze chases. In Airball, you're what appears to be a beach ball that bounces around from room to room looking for various items left behind by the evil wizard who turned you into a bag of air in the first place. The ultimate goal is to find a spellbook that will turn you back into a human and end the game.

However, there are a couple of



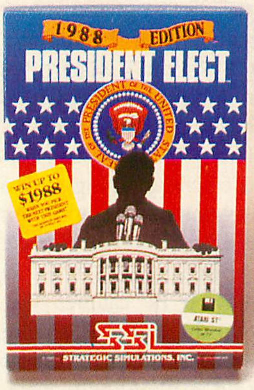
catches. You have a slow leak and must find a room with a pump every couple of minutes or you'll *sppppffttt* away to nothing. But don't stay on the pump too long or you'll explode.

Best advice here is to watch the demo for a while to get a feel for the pace and speed at which you'll move around the maze. The game has outstanding graphics and good animation, but the control system is subpar. Only the keyboard worked well for me, although control is *said* to be accomplished through joystick, mouse or keyboard. Most arcade vets hate to operate these games with the board.

I don't think that Airball has the delicious tension of Marble Madness or the charm of Trail Blazer. A separate product is the **Airball Construction Set** ($24.95) for those who want to create their own rooms.—RICK TEVERBAUGH

$39.95, color. MicroDeal USA (Michtron), 576 S. Telegraph, Pontiac, MI 48053. (313) 334-8729.

CIRCLE 215 ON READER SERVICE CARD



PRESIDENT ELECT

With another presidential election just around the corner, SSI has released the 1988 Edition of their election simulation, **President Elect.** This specialized program will appeal only to a select audience, but I guarantee that those who find the strategies of the campaign trail intriguing will not be disappointed.

Although election campaigns begin over a year before Election Day, President Elect covers only the final nine weeks. The game also dispenses with such trivialities as the candidates' positions on the major issues of the day. Instead it ties success to the proper use of money and manpower, a politician's main resources. In President Elect these resources are represented as Political Action Points (PAPs) and each candidate starts with his share of PAPs to spend as he sees fit.

After establishing an organization (by allocating PAPs to weekly overhead costs, thereby determining efficiency), the battle begins. You campaign on a national level (through the print and broadcast media) all the way

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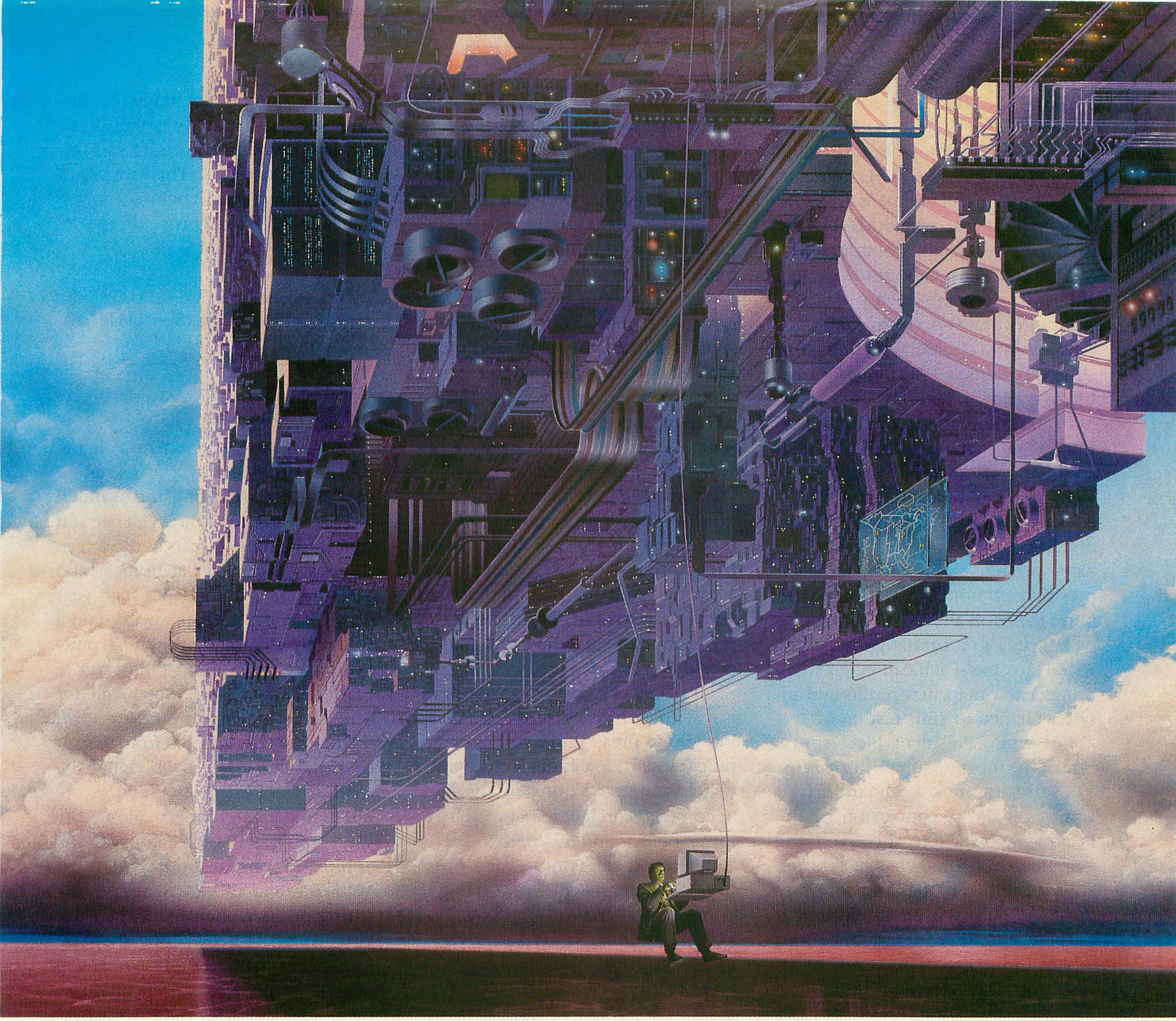

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CIRCLE **007** ON READER SERVICE CARD

ST GAMES GALLERY
continued from page 62

down to whistle stops in individual states. Your goal is to build and retain voter support. But too many stops are tiring and increase the odds that the weary candidate will commit a serious blunder. Throughout the game a colorful map keeps each player updated on voter support in each state, helping you decide which regions should be targeted during your next turn.

Even though the most visible portion of the game involves the allocation of resources, this program's foundation is based on real-life assumptions, such as incumbency, national economy and world peace. Debates provide the chance for each presidential hopeful to display his knowledge on the issues of the day, or fall prey to a campaign-wrecking social faux pas. Each campaign week brings a new map, new results and another chance to shift resources.

But while President Elect sports one of the most reasonable prices for ST software, this keyboard-driven game is a direct conversion of the PC/MS-DOS version and even the graphics are somewhat lackluster. Still, it is unlikely that any who buy President Elect will be disappointed, as there should be little doubt about what's in the box. This is *not* an arcade game. But as an educational and engaging simulation, President Elect gets my vote.—STEVE PANAK

$24.95, color. Strategic Simulations Inc., 1046 N. Rengstorff Avenue, Mountain View, CA 94043. (415) 964-1353.

CIRCLE 214 ON READER SERVICE CARD

TANGLEWOOD

I have played literally hundreds of games over the last few years and I find it unusual to have trouble understanding a program. **Tanglewood**, therefore, is unusual. And while I like a challenge, this game is just about the most confusing thing I've ever loaded into my ST.

The scenario is simple enough: your computer lets you see into an alien world and control five robotic mobiles which move about on the planet surface. Increasing the challenge, the operation and characteristics of the mobiles are as mysterious as the ultimate objectives of the game. What is certain, however, is that each mobile is in a varying state of disrepair—and unreliable until overhauled.

When you boot Tanglewood, your screen becomes a control panel with switches, indicators, dials and monitors. All control is through the mouse, and your first session with Tanglewood is spent trying to determine what the various switches do. Once you can communicate with mobile, you try moving about the planet. I say "try" because the mouse-induced movement of the mobiles is most frustrating—it never seems as if you have full control. The graphics are very attractive. I'm disappointed that the game failed to draw me into its world.

Like Hacker (which fills your monitor with a cryptic prompt, challenging you to break into a foreign computer system) few hints are provided to help you start. Ultimately, the game becomes a search in which you try to locate objects and use them properly. Tanglewood can confuse, and possibly challenge, you for days to come.—STEVE PANAK

$39.95, color. MicroDeal USA (Michtron), 576 S. Telegraph, Pontiac, MI 48053. (313) 334-8729.

CIRCLE 216 ON READER SERVICE CARD

DIAMOND MIKE

Diamond Mike is overly similar to the arcade classic Boulder Dash—which itself was derived from Dig Dug, but at least displayed some originality in blending fast action with thoughtful strategy.

In Boulder Dash you struggle through a number of caves, collecting diamonds and avoiding danger, primarily from falling rocks. Each cave contains an exit which will open when enough gems have been collected, and each maze is a puzzle whose escape requires skill, strategy, and a little luck. To describe Diamond Mike, all you need is to substitute the words "Diamond Mike" for "Boulder Dash" and numerous items for diamonds. You'll also have to substitute slower programming code, causing less satisfactory play. The low price, decent manual and enclosed bonus games do little to improve this package.—STEVE PANAK

$19.95, color or monchrome. XLEnt Software, P.O. Box 5228, Springfield, VA 22150. (703) 644-8881.

CIRCLE 217 ON READER SERVICE CARD

SUPER CYCLE

Super Cycle is a clone of Pole Position, with motorcycles instead of cars. But it's as exciting and as much fun as the original. You accelerate and shift through three gears as the screen shows a speedometer, tachometer and gearshift. If you shift to a high gear before gaining enough speed, you'll find yourself moving slowly, so practice your gears on Level 1 until you've mastered them. And watch out for other racers trying to bump you off the road, smash into you from behind or slow you down by hogging the road.

There's great scenery along the way: you'll see such sights as the Sphinx, Mount Rushmore, the Great Wall of China and the Space Shuttle sitting on its launch pad. There are also many obstacles along the way. Running into a pothole stops you dead in your tracks. Other obstacles include oil slicks, icy roads, a narrowing road with barricades and a distracting thunderstorm. Sharp curves, lampposts and trees approach you at frightening speeds.

My copy of Super Cycle came with instructions for the Commodore computer that don't match the Atari ST version. Also, on one occasion the game tried to save a high score and crashed. However, Super Cycle now saves scores flawlessly. A two-player mode or a construction set for building your own tracks would have made it a better game, but it's still full of racing fun.— JOHN MANOR

$19.95, color. Epyx, 600 Galveston Drive, Redwood City, CA 94063. (415) 366-0606.

CIRCLE 246 ON READER SERVICE CARD

SOFTWARE LIBRARY

DISK SUBSCRIBERS: Programs for 8-bit Atari computers can be used immediately. Just follow instructions in the accompanying magazine articles. ST Owners: See monthly disk's ST Help File for instructions on how to transfer programs to 3-1/2 inch disk.

DOS COMPATIBILITY: All 8-bit programs published by **Antic** are tested to work with Atari Disk Operating System (DOS) 2.0S and 2.5—*not* with the incompatible DOS 3.0. DOS 2.0S is available on each Antic Monthly Disk. Copy the DOS.SYS and DUP.SYS files.

TYPING SPECIAL ATARI CHARACTERS

Antic printed program listings leave a small space between each Atari Special Character for easier reading. Immediately below you will see the way **Antic** prints all the standard Atari letters and numbers, in upper and lower case, in normal and inverse video.

The Atari Special Characters and the keys you must type in order to get them are shown in the two boxes below.

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	CTRL ,		CTRL S
	CTRL A		CTRL T
	CTRL B		CTRL U
	CTRL C		CTRL V
	CTRL D		CTRL W
	CTRL E		CTRL X
	CTRL F		CTRL Y
	CTRL G		CTRL Z
	CTRL H		ESC ESC
	CTRL I		ESC CTRL −
	CTRL J		ESC CTRL =
	CTRL K		ESC CTRL +
	CTRL L		ESC CTRL *
	CTRL M		CTRL .
	CTRL N		CTRL ;
	CTRL O		SHIFT =
	CTRL P		ESC SHIFT CLEAR
	CTRL Q		ESC DELETE
	CTRL R		ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
	人 CTRL ,		CTRL X
	人 CTRL A		CTRL Y
	人 CTRL B		CTRL Z
	人 CTRL C		ESC SHIFT DELETE
	人 CTRL D		ESC SHIFT INSERT
	人 CTRL E		ESC CTRL TAB
	人 CTRL F		ESC SHIFT TAB
	人 CTRL G		人 CTRL .
	人 CTRL H		人 CTRL ;
	人 CTRL I		人 SHIFT =
	人 CTRL J		ESC CTRL 2
	人 CTRL K		ESC CTRL DELETE
	人 CTRL L		ESC CTRL INSERT
	人 CTRL M		
	人 CTRL N		
	人 CTRL O		
	人 CTRL P		
	人 CTRL Q		
	人 CTRL R		
	人 CTRL S		
	人 CTRL T		
	人 CTRL U		
	人 CTRL V		
	人 CTRL W		

Whenever the CONTROL key (CTRL on the 400/800) or SHIFT key is used, *hold it down* while you press the next key. Whenever the ESC key is pressed, *release* it before you type the next key.

Turn on inverse video by pressing the Reverse Video Mode Key . Turn it off by pressing it a second time. (On the 400/800, use the Atari Logo Key instead.)

Among the most common program typing mistakes are switching certain capital letters with their lower-case counterparts—you need to look especially carefully at P, X, O and 0 (zero).

Some of Atari Special Characters are not easy to tell apart from standard alpha-numeric characters. Usually the Special Characters will be boxed. Compare the two sets of characters below:

SPECIAL		STANDARD	
	CTRL F	/	/
	CTRL G	\	SHIFT +
	CTRL N	—	SHIFT −
	CTRL R	−	−
	CTRL S	+	+

HOW TO USE TYPO II (8-BIT)

TYPO II automatically proofreads **Antic**'s type-in BASIC listings for 8-bit Atari computers. It finds the exact line where you made a program typing mistake.

Type in TYPO II and SAVE a copy to disk or cassette. Now type GOTO 32000. When you see the instruction on the screen, type in a single program line **without the two-letter TYPO II code** at the left of the line number. Press the [RETURN] key.

Your line will reappear at the bottom of the screen with a two-letter TYPO II code on the left. If this code is not exactly the same as the line code printed in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk [*] followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000.

To remove TYPO II from your program, type LIST "D:FILENAME",0,31999 [RETURN] (Cassette owners LIST "C:). Type NEW, then ENTER "D:FILENAME"[RETURN](Cassette—ENTER "C:). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "↖":POSITION 11,1:? "TYPO II "

EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "↖":POSITION 11,1:? " TYPO II 
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press  RETURN  and edit line a
   bove.":GOTO 32050
```

challenging memory game, no reading required

SLEUTH

Article on page 17

LISTING 1

Don't type the TYPO II Codes!

```
JW 5 REM SLEUTH
EK 6 REM BY HEATH LAWRENCE
QV 7 REM (c)1988, ANTIC PUBLISHING
RP 10 GOSUB 405
RB 20 GOSUB 350
AC 30 REM MAIN ROUTINE
CJ 40 GOSUB 160:V1=Z:X1=CX:Y1=CY:GOSUB 16
   0:V2=Z:X2=CX:Y2=CY:CX=10:CY=10:LOCATE
   10,10,Z:IF Z<97 THEN Z=213
DY 50 IF V1=V2 THEN SC=1:GOTO 80
PY 60 C=95:FOR Q=10 TO 0 STEP -1:C=C+5:SO
   UND 1,C,10,8:POSITION 9,0:? #6;Q;"U":F
   OR D=1 TO 100:NEXT D:NEXT Q
CP 70 POSITION X1,Y1:? #6;"U":POSITION X2
   ,Y2:? #6;"U":SOUND 1,0,0,0
HL 80 IF PL=1 AND SC=1 THEN SC1=SC1+1:POS
   ITION 6,21:? #6;SC1;:JX=1:GOSUB 310
AK 90 IF PL=1 AND SC1<>10 THEN PL=2:I=1:F
   =13:STE=1:GOSUB 230:GOTO 120
HW 100 IF PL=2 AND SC=1 THEN SC2=SC2+1:PO
   SITION 18,21:? #6;SC2:JX=13:GOSUB 310
HR 110 IF PL=2 AND SC2<>10 THEN PL=1:I=13
   :F=1:STE=-1:GOSUB 230
RB 120 SC=0:IF SC1=10 THEN JX=1:GOTO 260
JI 130 IF SC2=10 THEN JX=13:GOTO 260
QO 140 GOTO 40
EL 150 REM MOVE CURSOR
UH 160 S=STICK((PL-1)*STCK):POKE 77,0:IF
   STRIG((PL-1)*STCK)=0 AND Z=213 THEN GO
   SUB 280:RETURN
PT 170 IF S=15 THEN POSITION CX,CY:? #6;"
   U":FOR D=1 TO 20:NEXT D:POSITION CX,CY
   :? #6;CHR$(Z):GOTO 160
TG 180 POSITION CX,CY:? #6;CHR$(Z)
FO 190 AX=1*(S=5 OR S=6 OR S=7)-1*(S=9 OR
    S=10 OR S=11):AY=1*(S=9 OR S=13 OR S=
   5)-1*(S=10 OR S=14 OR S=6)
YL 200 CX=CX+AX:CY=CY+AY:CX=CX+17*(CX<1)-
   18*(CX>18):CY=CY+18*(CY<1)-19*(CY>19):
   LOCATE CX,CY,Z:POSITION CX,CY
RB 210 ? #6;"U":SOUND 1,X+Y,10,8:SOUND 1,
   0,0,0:GOTO 160

MU 220 REM INDICATE PLAYER TURN
MC 230 FOR L=I TO F STEP STE:POSITION L,2
   2:? #6;"^":FOR D=1 TO 30:NEXT D:POSITI
   ON L,22:? #6;" "
OW 240 SOUND 1,L+90,10,8:NEXT L:POSITION
   F,22:? #6;"^":SOUND 1,0,0,0:RETURN
GZ 250 REM GAME OVER
UA 260 POSITION JX,22:? #6;"*":JUMPS=1:GO
```

continued on next page

```
   SUB 310:ON PEEK(53279)<>6 GOTO 260:GOT
   O 20
CQ 270 REM REVEAL SHAPE
WP 280 FOR A=215 TO 218:POSITION CX,CY:?
   #6;CHR$(A):SOUND 1,(A-200)*5,10,8:FOR
   D=1 TO 75:NEXT D:NEXT A:SOUND 1,0,0,0
NP 290 POSITION CX,CY:? #6;CHR$(POS(CX,CY
   )):Z=POS(CX,CY):RETURN
NV 300 REM JUMP ANIMATION
OC 310 POSITION X1,Y1:? #6;CHR$(V1+32):PO
   SITION X2,Y2:? #6;CHR$(V2+32):LOCATE 1
   0,10,Z:FOR NJ=1 TO JUMPS
JN 320 FOR P=200 TO 10 STEP -8:SH=225*(P>
   175)+226*(P<176 AND P>120)+227*(P<121
   AND P>65)+228*(P<66):SOUND 1,P,10,8
EW 330 POSITION JX,21:? #6;CHR$(SH):NEXT
   P:POSITION JX,21:? #6;"a":NEXT NJ:SOUN
   D 1,0,0,0:RETURN
ZM 340 REM INITIALIZE/PLAYFIELD
IS 350 GRAPHICS 17:POKE 756,ST/256:POKE 7
   12,35:POKE 710,0:SC1=0:SC2=0:JUMPS=4:P
   L=1:CX=10:CY=10:Z=213
AB 360 FOR X=0 TO 19:POSITION X,0:? #6;"U
   ":POSITION X,20:? #6;"U":NEXT X:FOR Y=
   0 TO 20:POSITION 0,Y:? #6;"U"
VO 370 POSITION 19,Y:? #6;"U":NEXT Y:FOR
   Y=1 TO 19:FOR X=1 TO 18:POS(X,Y)=INT(R
   ND(0)*16)+69:POSITION X,Y:? #6;"U"
FL 380 SOUND 1,(X+Y)*3,10,8:NEXT X:NEXT Y
   :SOUND 1,0,0,0:POSITION 1,21:? #6;"a■#
   1 0":POSITION 13,21:? #6;"a■#2 0"
RM 390 POSITION 1,22:? #6;"^":RETURN
RT 400 REM REDEFINE
WQ 405 GRAPHICS 0:POKE 710,96:POKE 712,96
   :POSITION 15,2:? "SLEUTH"
EJ 406 POSITION 12,10:? "1 Joystick":? :?
   ,"2 Joysticks"
RR 408 POSITION 17,15:INPUT STCK:STCK=STC
   K-1:IF  NOT (STCK=0 OR STCK=1) THEN 40
   5
MQ 410 DIM POS(30,30):POKE 106,PEEK(740)-
   5:GRAPHICS 17:POKE 712,96:POSITION 6,7
   :? #6;"SLEUTH":POSITION 8,10
ZZ 420 ? #6;"BY":POSITION 3,13:? #6;"HEA
   TH LAWRENCE":POSITION 3,17:? #6;"PLEAS
   E WAIT...":ST=(PEEK(106)+1)*256
IT 430 FOR X=0 TO 1023:POKE ST+X,PEEK(573
   44+X):NEXT X:Z=264:FOR SHAPE=1 TO 26:F
   OR X=0 TO 7:READ BYTE
CU 440 POKE ST+Z+X,BYTE:NEXT X:Z=Z+8:NEXT
   SHAPE:RETURN
OO 450 REM SHAPE DATA
ZB 460 DATA 24,24,60,90,153,36,36,102,25,
   26,60,88,152,37,34,96,153,90,60,24,24,
   165,66,0,24,24,60,90,153,231,0,0,60
GK 470 DATA 126,90,126,126,90,102,60,24,2
   4,72,62,9,56,78,193,108,16,126,239,223
   ,223,110,60,254,16,48,121,222,120
JQ 480 DATA 132,0,24,60,126,66,255,219,90
   ,195,60,90,153,255,255,153,90,60,56,68
   ,130,255,129,181,177,255,60,102,102
LN 490 DATA 14,24,0,24,24,36,24,165,90,90
   ,165,24,36,60,36,36,36,60,60,165,126,1
   32,72,48,255,133,135,133,255,0,8,254
DM 500 DATA 28,62,255,90,60,0,126,255,165
   ,60,90,129,255,24,60,36,126,165,189,36
   ,102,60,102,195,255,60,60,60,126,15
ZL 510 DATA 14,8,8,8,104,240,96,170,1,128
   ,1,128,1,128,85,255,255,255,255,255,25
   5,255,255,255,255,255,231,231,255
EV 520 DATA 255,255,255,255,231,195,195,2
   31,255,255,255,195,129,129,129,129,195
   ,255,195,129,0,0,0,0,129,255
```

automate your "Print Shop" envelopes

P.S. ENVELOPE MAKER

Article on page 27

LISTING 1

Don't type the TYPO II Codes!

```
LW 40 REM DISKFILE ENHANCEMENT
XP 45 REM BY S.L. HARRISON
QU 46 REM (c)1988, ANTIC PUBLISHING
TK 50 POKE 712,98:DIM FILE$(14)
UY 235 DATA USA
NJ 250 GOTO 2695:REM MAIN PROGRAM
FC 473 ? "■■■■■■■■■■■■&■■■■■■■■■■■■■■■"
BT 476 ? "■■■■■Stan Harrison■■■■■■■■■■"
NU 520 FOR DE=1 TO 200:NEXT DE
WW 610 RESTORE 210:I=0
HF 670 TRAP 680:I=I+1:GOTO 620
TV 680 TRAP 40000:? CS$:GOSUB 270:REM SET
   BG
UJ 975 IF FLAG THEN POKE 702,64:GOTO 1045

WH 990 I=0:TEMP$=BL$
PZ 1043 GOTO 1050
WB 1045 FOR I=0 TO COUNT-1
OT 1047 TRAP 2760:INPUT #3;Q$:IF I=0 AND
   LEN(Q$)<1 THEN POP :GOTO 1045
NO 1073 IF  NOT FLAG THEN GOTO 1080
GE 1075 NEXT I
PX 1077 GOTO 1120
TW 2595 PASS=1:IF FLAG THEN GOTO 2695
DY 2650 IF Q$="N" OR Q$="n" THEN 2695
CL 2695 IF FLAG AND PASS THEN GOTO 2720
YY 2715 GOSUB 3000:REM ->KEYBD OR DISK
NL 2990 REM KEYBOARD OR DISK
ZA 3000 GOSUB 270:REM SETBG
RZ 3010 POKE 702,64:REM UPPERCASE
TB 3020 ? CS$:POSITION 2,10:? "ENTER NAME
   S FROM KEYBOARD OR DISK? D■";:INPUT #1
   6;Q$
WY 3030 IF Q$="K" OR Q$="k" THEN FLAG=0:R
   ETURN
OC 3040 IF Q$<>"D" AND Q$<>"d" THEN GOTO
   3020
US 3050 FLAG=1
GM 3060 REM GET NAME FROM DISK
SG 3070 GOSUB 270:GOSUB 310:REM SETBG, CU
   RSOR
ZL 3080 ? CS$:POSITION 7,10:? "INSERT DIS
   K WITH LABEL FILES":? "       PRESS ■RE
   TURN■ WHEN READY"
GN 3090 CLOSE #1:OPEN #1,4,0,"K:":GET #1,
   L:IF L<>155 THEN GOTO 3090
VK 3100 GOSUB 310:CLOSE #1:OPEN #1,6,0,"D
   :*.*":? "■"
QS 3110 TRAP 3120:INPUT #1,TEMP$:? TEMP$:
   GOTO 3110
JL 3120 CLOSE #1:? :? "ENTER NAME OF FILE
    CONTAINING NAMES":INPUT FILE$
YK 3130 TEMP$="D:":IF FILE$(2,2)<>":" AND
    FILE$(3,3)<>":" THEN TEMP$(3)=FILE$:F
   ILE$=TEMP$:TEMP$=""
ZM 3140 CLOSE #1:OPEN #1,4,0,FILE$:COUNT=
   0
KJ 3150 INPUT #1,Q$
TS 3160 IF LEN(Q$)<1 THEN GOTO 3200
GO 3170 COUNT=COUNT+1
CV 3180 IF COUNT>4 THEN CLOSE #1:GOTO 322
   0
RO 3190 GOTO 3150
CY 3200 IF COUNT=0 THEN GOTO 3150
TD 3210 CLOSE #1:GOTO 3270
JI 3220 ? CS$:POSITION 2,11:? "[DO NOT IN
   CLUDE BLANK LINES!]"
LL 3230 POSITION 2,10:? "HOW MANY LINES I
   N EACH RECORD 3■";:INPUT #16;COUNT
SU 3240 IF COUNT<1 THEN ? :? "YOU MUST HA
   VE AT LEAST ONE LINE":GOTO 3260
AP 3250 IF COUNT>4 THEN ? :? "YOU CAN'T H
   AVE MORE THAN 4 LINES"
DL 3260 IF COUNT<1 OR COUNT>4 THEN FOR DE
   =1 TO 150:NEXT DE:GOTO 3020
TR 3270 CLOSE #3:OPEN #3,4,0,FILE$
BD 3280 RETURN
```

abandon all hope, ye who don't use TYPO II

ESCAPE FROM HELL!

Article on page 13

LISTING 1

Don't type the TYPO II Codes!

```
LI 1 REM ESCAPE FROM HELL!
UI 2 REM BY TONY BARNES
QR 3 REM (c)1988, ANTIC PUBLISHING
OU 10 GRAPHICS 18:POKE 756,152:POKE 708,3
   8:POKE 709,244:POKE 710,50:POKE 711,21
   4
RC 12 DIM SET$(120),DEV$(24)
BN 15 SUI=1:GOSUB 10000
LY 20 POKE 559,34:GOTO 9000
IZ 500 FOR T=200 TO 0 STEP -50:SOUND 1,T,
   12,T/25:SOUND 0,T,8,T/25:NEXT T
CK 505 SC=SC+10:IF SC>HUN AND FLG THEN PO
   P :GOTO 700
VK 506 POSITION 6,11:? #6;SC:BMB=BMB+1:IF
    BMB>=MAX THEN POP :GOTO 550
ZD 510 RETURN
VT 550 COLOR 138:PLOT 0,0:DRAWTO 19,0:FOR
    T=1 TO 10:SOUND 1,237,20,T:SOUND 0,23
   8,20,T
SC 555 COLOR 138:PLOT 0,T:COLOR 42:PLOT 1
   ,T:DRAWTO 18,T:COLOR 138:PLOT 19,T:NEX
   T T
QA 560 COLOR 138:PLOT 0,11:DRAWTO 19,11:P
   OSITION 6,5:? #6;"penance"
QV 561 POSITION 5,6:? #6;"continues":FOR
   T=15 TO 0 STEP -0.1
YP 565 SOUND 0,237,20,T:SOUND 1,238,20,T:
   NEXT T:FOR T=INT(TMR/10) TO 0 STEP -10

YX 570 FOR I=6 TO 0 STEP -1:SOUND 0,30,10
   ,I:NEXT I:SC=SC+5:NEXT T:SCR=SCR+1:GOT
   O 8000
GX 600 FOR ZQ=15 TO 0 STEP -1:SOUND 1,122
   -ZQ,8,ZQ:SOUND 0,0,0,3
ZE 610 COLOR 134:IF ZQ/2=INT(ZQ/2) THEN C
   OLOR 26
NN 620 PLOT X1,Y1:NEXT ZQ:COLOR 27:PLOT X
   1,Y1:SOUND 0,0,0,3
XK 630 FOR ZQ=0 TO 15 STEP 3:SOUND 1,122-
   ZQ,8,ZQ:COLOR (27-(ZQ/2=INT(ZQ/2)))
XZ 635 ZQ1=USR(FLIPM,39128,39128,8)
EB 640 PLOT X1,Y1:NEXT ZQ:SOUND 0,0,0,0:S
   OUND 1,0,0,0:COLOR 32:PLOT X1,Y1
PE 650 SUI=0:RETURN
ZD 700 GRAPHICS 18:POKE 756,152:DEG :M=-1
   1/430:OLDX=0:OLDY=0:POKE 712,114:POKE
   708,14
EK 705 POSITION 0,0:? #6;"&&&&&&&&&&&& &&
   &&&&"
LE 710 SOUND 2,0,0,0:FOR X=200 TO 50 STEP
    -10:SOUND 0,X,10,14:NEXT X:RESTORE 12
   80:FOR A=0 TO 430 STEP 10
LX 720 TRAP 1270:READ T,ZQ,B,C,D,VOL
FF 730 IF VOL=0 THEN 760
PE 740 SOUND 0,ZQ,14,10:SOUND 1,B,14,6:SO
   UND 2,C,14,6:SOUND 3,C,14,6:FOR X=1 TO
    T:NEXT X
YU 760 JNK=USR(MOV,ADR("▯Z$▯▯▯")+3*(A/30=
   INT(A/30)),38960,3)
MJ 765 OFFSET=SIN(A)*3+9:Y=M*A+11
JD 770 COLOR 32:PLOT OLDX,OLDY:COLOR 38:P
   LOT OFFSET,Y:OLDX=OFFSET:OLDY=Y
QS 775 IF VOL=0 THEN FOR X=0 TO 3:SOUND X
   ,0,0,0:NEXT X:IF T>24 THEN FOR X=1 TO
   T:NEXT X
FG 778 SET$="   / / /    PRESS TRIGGER TO
   DIE AGAIN"
PE 780 NEXT A:GRAPHICS 34:POKE 756,152:PO
   KE 712,114:POKE 710,114:POKE 708,14:PO
   SITION 6,5:? #6;"absolved":X=1
SJ 781 POKE 752,1:POKE 656,2:POKE 657,2:?
    SET$(X,37);SET$(1,X);:IF X>36 THEN X=
   1
CB 785 POKE 711,PEEK(20):IF STRIG(0)=0 TH
   EN POKE 559,0:GRAPHICS 2:GOTO 15
LF 790 POKE 77,0:X=X+1:GOTO 781
NP 800 X=X2+0.3*(X2<X1)-0.3*(X2>X1):LOCAT
   E X,Y2,Z:IF Z>128 AND Z<137 THEN 2000
LS 801 IF INT(X2+0.5)>INT(X2P+0.5) THEN Z
   Q=USR(MOV,ADR(SET$)+48,38968,24)
YP 802 IF INT(X2+0.5)<INT(X2P+0.5) THEN Z
   Q=USR(MOV,ADR(DEV$),38968,24)
FD 803 X2P=X2
TA 805 IF Z=32 OR (Z>166 AND Z<170) THEN
   815
IM 810 X=X2
UM 815 F2=F2+1:IF F2=3 THEN F2=0:ZQ=USR(M
   OV,FIRE+(RND(0)>0.66)*9,39120,8)
FC 820 COLOR 32:PLOT X2,Y2:X2=X:COLOR 167
   +F2:PLOT X2,Y2:LOCATE X2,Y2+1,Z
KK 825 IF Z=32 THEN COLOR 32:PLOT X2,Y2:Y
   2=Y2+1:COLOR 167:PLOT X2,Y2
WY 830 IF Z=26 THEN 850
ZZ 835 RETURN
LD 850 I=Y2+1:COLOR 27:PLOT X2,I:FOR T=15
    TO 0 STEP -1:SOUND 1,162,10,T:NEXT T
RN 855 SOUND 0,Y2,10,2:SOUND 1,Y2+50,10,2
   :LOCATE X2,Y2-1,Z:IF Z<>32 THEN 865
KD 860 COLOR 32:PLOT X2,Y2:Y2=Y2-1:IF Y2=
   0 THEN 865
GJ 862 COLOR 168:PLOT X2,Y2:GOTO 855
GI 865 COLOR 26:PLOT X2,I:SOUND 0,0,0,0:S
   OUND 1,0,0,0:RETURN
ZJ 1000 POKE 77,0:TMR=TMR-1:POSITION 15,1
   1:? #6;INT(TMR/10);" ";:IF TMR<=0 THEN
    2000
KA 1002 IF PEEK(53279)=6 THEN 20
RM 1003 SUI=1:IF PEEK(644)=0 THEN GOSUB 6
   00:GOTO 2000
JE 1004 REM COLOR 25:PLOT X1,Y1
KD 1005 GOSUB 800:ST=PEEK(632):IF ST>12 T
   HEN 1040
VN 1010 X=X1+(ST<8)-(ST>8):IF X<0 OR X>19
    THEN 1050
JF 1015 LOCATE X,Y1,Z:IF Z=32 THEN 1030
MR 1017 IF Z=175 THEN GOSUB 500:GOTO 1030

BR 1020 X=X1
FV 1030 FRM=1-FRM:COLOR 32:PLOT X1,Y1:X1=
   X:COLOR (130+2*(ST>8))+FRM:PLOT X1,Y1
QH 1035 SOUND 0,21,8,8:SOUND 0,0,0,0:GOTO
    1050
HP 1040 COLOR 134:PLOT X1,Y1
DL 1050 LOCATE X1,Y1+1,Z:IF Z=32 THEN COL
   OR 32:PLOT X1,Y1:Y1=Y1+1:COLOR 129:PLO
   T X1,Y1
XN 1055 IF Z=26 THEN 1100
TW 1060 IF Z=175 THEN GOSUB 500:COLOR 32:
   PLOT X1,Y1+1
VT 1065 IF Z>166 AND Z<170 THEN 2000
ER 1070 IF Z=11 THEN COLOR 12:PLOT X1,Y1+
   1
HJ 1072 IF Z=12 THEN COLOR 32:PLOT X1,Y1+
   1
BT 1075 IF Z=173 THEN ST=7:GOSUB 800:GOTO
    1010
LN 1077 IF Z=174 THEN ST=11:GOSUB 800:GOT
   O 1010
NP 1090 GOTO 1000
AV 1100 I=Y1+1:COLOR 27:PLOT X1,I:FOR T=1
   5 TO 0 STEP -1:SOUND 1,122-T,8,T:ZQ=US
   R(FLIPM,39128,39128,8)
FN 1101 SOUND 0,0,0,3:NEXT T:SOUND 0,0,0,
   0
CU 1102 FOR T=0 TO 53 STEP 6:SOUND 0,T,10
   ,14:NEXT T
PY 1105 SOUND 1,62-Y1-INT(RND(0)*4),10,Y1

XY 1106 SOUND 0,62,0,4
ZL 1107 LOCATE X1,Y1-1,Z:IF Z<>32 THEN 11
   20
BH 1110 COLOR 32:PLOT X1,Y1:Y1=Y1-1:IF Y1
   =0 THEN 1120
CN 1115 COLOR 134:PLOT X1,Y1:GOTO 1105
YW 1120 COLOR 26:PLOT X1,I:SOUND 0,0,0,0:
   SOUND 1,0,0,0:GOTO 1000
IA 1200 REM
FM 1270 END
WF 1280 DATA 319,53,72,42,217,1,23,0,0,0,
   0,0,106,72,72,53,173,1,23,0,0,0,0,0
CS 1290 DATA 106,64,81,53,162,1,23,0,0,0,
   0,0,106,72,85,53,217,1,293,0,0,0,0,0
```

continued on next page

```
VJ 1300 DATA 319,53,72,42,217,1,23,0,0,0,
   0,0,106,72,72,53,173,1,23,0,0,0,0,0
OK 1310 DATA 106,64,81,53,162,1,23,0,0,0,
   0,0,106,72,85,53,217,1,83,0,0,0,0,0
ZY 1320 DATA 2,53,72,53,173,1,1,0,0,0,0,0
   ,2,53,72,53,173,1,23,0,0,0,0,0
NS 1330 DATA 106,53,64,40,162,1,18,0,0,0,
   0,0,106,53,72,42,217,1,23,0,0,0,0,0
NV 1340 DATA 83,0,0,0,0,0,2,53,72,53,173,
   1,1,0,0,0,0,0,2,53,72,53,173,1
HS 1350 DATA 23,0,0,0,0,0,106,53,64,40,16
   2,1,18,0,0,0,0,0,106,53,72,42,217,1
TH 1360 DATA 23,0,0,0,0,0,23,0,0,0,0,0,10
   6,53,72,52,173,1,23,0,0,0,0,0
LL 1370 DATA 106,57,81,47,193,1,106,53,85
   ,72,217,1,106,53,96,72,144,1,23,0,0,0,
   0,0
CU 1380 DATA 212,57,96,72,144,1,23,0,0,0,
   0,0,638,53,85,72,217,1,23,0,0,0,0,99
JD 2000 I=PEEK(560):FOR T=100 TO 200 STEP
    10:SOUND 0,T,10,10:SOUND 0,T,8,10:Z=I
   NT(RND(0)*2)
NK 2002 POKE 560,I+3*(Z=2)-3*(Z=1):NEXT T
   :FOR T=15 TO 0 STEP -1
KB 2005 SOUND 0,PEEK(53770),0,T:SOUND 1,2
   08,12,T:NEXT T:MN=MN-1:IF MN<0 THEN 20
   20
YC 2010 POKE 560,I:GOTO 8000
BC 2020 POKE 560,I
PZ 2025 ? #6;"■":Y1=1:DY=1:GOTO 9000
KU 8000 POKE 559,0:? #6;"■":BMB=0:IF SCR=
   7 THEN SCR=1:FLG=1
XN 8002 IF MN>0 THEN FOR T=1 TO MN:POSITI
   ON 16+T,0:? #6;"C";:NEXT T
OX 8005 POSITION 0,1:ON SCR GOSUB 8020,80
   80,8130,8180,8230,8280
EW 8010 POKE 559,34:POSITION 0,11:? #6;"S
   CORE=";SC
KD 8015 POSITION 10,11:? #6;"TIME=";INT(T
   MR/10):COLOR 134:PLOT X1,Y1:GOTO 1000
ZZ 8020 ? #6;"      *****      ***";
BQ 8025 ? #6;"*      ■ ■ ■  ■      *";
ZW 8030 ? #6;"**     ***** ***    * *";
SQ 8035 ? #6;"***      ■    **    * *";
ZR 8040 ? #6;"***     ****      ◘*■*";
XE 8045 ? #6;" ■   ■ ****       ** *";
UQ 8050 ? #6;"***  **◘****      *** *";
WG 8055 ? #6;"  * ******        *** *";
AU 8060 ? #6;" ■               ■   ■  ";
ER 8065 ? #6;"***◘******◘***◘*****";
PC 8067 MAX=11:X1=0:Y1=1:X2=9:Y2=8:IF SUI
    THEN TMR=1001
CE 8068 RETURN
YB 8080 ? #6;"***********   ******";
YK 8085 ? #6;" ■■          ****    *";
LO 8090 ? #6;"**** **  ■      * *■ *";
LQ 8095 ? #6;"* ■       **  ■    ** *";
JL 8100 ? #6;"****  ■       **    ■*";
ND 8105 ? #6;"*   ■   ** ■   *◘   ****";
KA 8110 ? #6;"* **       ** ■     ■*";
EE 8115 ? #6;"*   *          **   ****";
HK 8120 ? #6;"        ■  ■  ■     ■ ■";
SD 8125 ? #6;"*◘**◘***◘**◘**◘◘****";
RY 8127 MAX=17:X1=0:Y1=9:X2=16:Y2=7:IF SU
   I THEN TMR=501
BU 8128 RETURN
HA 8130 ? #6;"                      ";
FV 8135 ? #6;"   * ■ ■  ■■  ■ ■ *   ";
NV 8140 ? #6;"* *◻◻◻◻ ◻◻◻◻ ◻◻◻◻* *";
FY 8145 ? #6;"*  ■ ■  ■  ■  ■  ■ ■  *";
OR 8150 ? #6;"* ◻◻◻◻◻ ◻◻◻◻ ◻◻◻◻◻ *";
DO 8155 ? #6;"*     ■      ■■      *";
OU 8160 ? #6;"* ◻◻◻◻◻ ◻◻◻◻ ◻◻◻◻◻ *";
OE 8165 ? #6;"*       ■             ";
MQ 8170 ? #6;"*   ***      ■    ***  *";
AE 8175 ? #6;"*◘** **◘****◘** **◘*";
GZ 8177 MAX=18:X1=4:Y1=8:X2=15:Y2=8:IF SU
   I THEN TMR=1001
CJ 8178 RETURN
BZ 8180 ? #6;"         ■ ■    *******";
NI 8185 ? #6;"◻◻◻◻◻◻◻◻◻◻◻        ";
UV 8190 ? #6;"◘***    ■      ◘■◻◻*◻*";
UI 8195 ? #6;"* ■■   ◻◻◻     ◘■◻◻◻* *";
MO 8200 ? #6;"* ◻◻   ◻■◻  ◘■◻◻◻◻■*";
XM 8205 ? #6;"*       ◻◻◻    ◻◻ ■■* *";
VL 8210 ? #6;"*    ■   ■     ◻◻ ◻◻◻*◘*";
MU 8215 ? #6;"* ******* **     **■* *";
XN 8220 ? #6;"*                     *";
OJ 8225 ? #6;"*◘*******◘***◘****◘*";
SP 8227 MAX=14:X1=0:Y1=0:X2=15:Y2=9:IF SU
   I THEN TMR=901
BW 8228 RETURN
SD 8230 ? #6;"*              ■  ■   *";
SH 8235 ? #6;"*■■■■■■■■■******   *";
IU 8240 ? #6;"*   ■  ■            **";
TJ 8245 ? #6;"*  ******■■■■■■■■*  ";
MX 8250 ? #6;"*                   ■**";
SZ 8255 ? #6;"*         ■      ■  *****";
ZT 8260 ? #6;"*◘◘■* *** ***      ■*";
GG 8265 ? #6;"*                  *■■ *";
ZE 8270 ? #6;"*■ ■    ■   ■     ■■ ";
IS 8275 ? #6;"*■■■■◘***◘◘**◘◘*■■■■";
UV 8277 MAX=14:X1=1:Y1=0:X2=16:Y2=9:IF SU
   I THEN TMR=901
CL 8278 RETURN
YF 8280 ? #6;"*                    *";
MS 8285 ? #6;"*◘■        ■*      * *";
NJ 8290 ? #6;"**◘■        *     ■* *";
FG 8295 ? #6;"** ◘■ ◘     *◘◘◘◘◘** *";
LZ 8300 ? #6;"* ■ ◘ *     * ■      * *";
IU 8305 ? #6;"****◘       *◘◘◘◘◘** *";
UP 8310 ? #6;"* ■ ■       * ■  ■ * *";
KQ 8315 ? #6;"* ***       ***◘◘*** *";
XP 8320 ? #6;"*            ■ ■ ■ ■ *";
AJ 8325 ? #6;"*■■■■◘■■*********◘*";
JZ 8327 MAX=15:X1=14:Y1=9:X2=0:Y2=0:IF SU
   I THEN TMR=501
BY 8328 RETURN
WN 9000 GRAPHICS 2:POKE 756,152:POKE 710,
   66:POKE 752,1:POKE 712,66:POKE 711,0
IL 9001 ? :? ,"BY TONY BARNES"
ND 9002 ? ,"YOUR SCORE = ";SC
CS 9004 ? "      PRESS THE TRIGGER TO BEGIN
   ";
YL 9006 ? #6;"        escape":? #6
IC 9008 ? #6;"          from":? #6
KG 9010 ? #6;" <  <         <<  <<"
HY 9012 ? #6;" >   >  >>    >    >"
EG 9014 ? #6;" <<<< <  <   <    <"
BO 9016 ? #6;" >   > >>>>  >    >"
DA 9018 ? #6;" <   < <      <   <"
GZ 9020 ? #6;" >   >  >>> >>> >>>"
WW 9021 SOUND 0,63,12,14:SOUND 1,62,12,14
   :SOUND 2,62,8,6:SOUND 3,1,16,2
JA 9022 ZQ=USR(ADR("hhh■■■■e■■■■■■■■■■
   ■■■"),708)
CE 9030 GRAPHICS 18:POKE 756,152:POKE 708
   ,18:POKE 709,244:POKE 710,50:POKE 711,
   214:DEG
CB 9035 SOUND 2,106,8,2:SOUND 3,1,14,14:S
   C=0:SCR=1:HVN=INT(RND(0)*2500)+2450:MN
   =3:TIMR=1001
BG 9037 MN=3:TIMR=1001:HVN=HVN*(PEEK(632)
   <>14)+50:IF HVN<255 THEN FLG=1
SC 9040 FOR T=11 TO 0 STEP -1:SOUND 0,T,8
   ,T:SOUND 1,T+50,2,T:COLOR 32:PLOT 0,T
EU 9045 DRAWTO 19,T:NEXT T:GOTO 8000
XN 10000 POKE 559,0:CHR=38912:I=256*224
VS 10001 MOV=ADR("hh■■h■■h■■h■■h■■h■■■■■
   ■■■■■■■■■■■■■■■■■■"):REM FM,TO,KN
   T
GK 10004 FLIPM=ADR("hh■■h■■h■■h■■h■■h■■■■
   ■■■■■fKJ■■■K■■■■■■■■■■■■■■■■■■")
JU 10006 SET$(1,60)="■■B<■■$f■■■<Z■$6■■■■
   ■■■■■■■■■■■■■■■■<Z■$1■■■<Z■$f■■■I_=■6■■
   ■■"
VB 10007 SET$(61,120)="■■■6■=1■■■■6■■■■■■
   ■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■8:v
   f■■■"
VN 10008 FIRE=ADR("■■■YU■■Z■■■k■U^")
BU 10009 DEV$=")99-Z■■1■99■9■(1■■■■■■"
GX 10010 POKE 204,152:POKE 206,224:I=USR(
   MOV,I,CHR,512):RESTORE 30000:FLG=0
BO 10018 ZQ=USR(MOV,ADR(SET$),38920,120)
NW 10020 READ I:IF I=-1 THEN RETURN
HZ 10030 FOR Z=0 TO 7:READ T:POKE (CHR+I*
   8)+Z,T:NEXT Z
XA 10040 GOTO 10020
BX 30140 REM
TF 30150 DATA 26,0,0,8,89,214,251,175,122
ON 30160 DATA 27,82,218,219,127,182,171,2
   39,90
ZG 30170 DATA 28,170,170,170,170,170,170,
   170,170
QB 30175 DATA 30,85,85,85,85,85,85,85,85
FT 30180 DATA -1
```

LISTING 2

```
AA 10 REM ESCAPE FROM HELL! LISTING 2
VK 20 REM BY TONY BARNES
GD 30 REM (c) 1985,1988 ANTIC PUBLISHING
EV 40 REM (LINES 10-250 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
```

```
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PR 60 DIM FN$(20),TEMP$(20),AR$(93):DPL=P
   EEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
RD 80 ? "Disk or Cassette?";:POKE 764,25
   5
PY 90 IF  NOT (PEEK(764)=18 OR PEEK(764)=
   58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
VB 110 POKE 764,255:GRAPHICS 0:? "      AN
   TIC'S GENERIC BASIC LOADER"
MY 120 ? ,"BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LW 150 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BQ 160 AR$="":READ AR$
YC 170 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DM 180 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")      "
BK 190 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CM 210 IF C<LN+1 THEN ? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FN$="C:" THEN ? :? " Prepare ca
   ssette, press [RETURN]"
AR 230 OPEN #1,8,0,FN$
PV 240 POKE 766,1:? #1;A$;:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0:? " COMPLETED 
   "
GN 1000 DATA 440
LL 1010 DATA 057048050050032090081061085
   0830820400650680820400341041041041701
   73011212024101020010141010212
PG 1020 DATA 157018208173132002201000208
   2360960340410440550480560411550490480
   48048049032077079086061065068
OA 1030 DATA 082040034104104133241104133
   2401041332131041332121041332391041332
   38160000177240145212230212208
VE 1040 DATA 002230213230240208002230241
   1982382082341982390162300960340410580
   82069077032070077044084079044
RX 1050 DATA 075078084155049048048048052
   0320700760730800770610650680820400341
   04104133241104133240104133213
AS 1060 DATA 104133212104133239104133238
   1600001772401620080240101022032022082
   49165203145212230212208002230
BM 1070 DATA 213230240208002230241198238
   2082231982390162190960340411550490480
   48048054032083069084036040049
GT 1080 DATA 044054048041061034024024066
   0600240240361020240240000600900240360
   54024024000024024024016024024
GE 1090 DATA 024000024024024008024024024
   0000600900240361080240240000600900240
   36102148157157073095061021054
TJ 1100 DATA 021157157139034155049048048
   0480550320830690840360400540490440490
   50048041061034157125020054020
KA 1110 DATA 061093137159125021054251251
   2510002232232230002551712132550000000
   00000255129129255000000000000
KX 1120 DATA 255247131129131247255000255
   2391931291932392550000240560581181022
   55195000034155049048048048056
GG 1130 DATA 032070073082069061065068082
   0400340000000080892142511751220000000
   16154107223245094034041155049
OP 1140 DATA 048048048057032068069086036
   0610340411851851462501881681081681851
   85209185190040108040188186145
LZ 1150 DATA 249190168236034155
```

list processing power pick-up *Article on page 29*

STRING ARRAY SIMULATOR

Don't type the TYPO II Codes!

LISTING 1

```
FM 2 REM STRING ARRAY HANDLER #1
ET 4 REM BY RICHARD WHITSELL
OS 6 REM (c)1988, ANTIC PUBLISHING INC.
TW 10 MAXNUM=10:MAXLEN=20+1
FR 20 DIM STORAGE$(MAXNUM*MAXLEN)
NJ 30 DIM WORK$(MAXLEN)
LS 40 GRAPHICS 0
TJ 50 PRINT "ENTER 10 NAMES"
GP 60 FOR INDEX=0 TO MAXNUM-1
ZG 70 INPUT WORK$:GOSUB 6000
NM 80 NEXT INDEX
LX 90 GRAPHICS 0
QU 100 PRINT "NAME",,"LENGTH"
QN 105 REM ==========================
UL 110 FOR INDEX=0 TO MAXNUM-1
SE 120 GOSUB 5000
TW 130 PRINT WORK$,LEN(WORK$)
WG 140 NEXT INDEX
QV 145 REM ==========================
OA 150 END
ON 4999 REM SUBROUTINE TO GET STRING
PX 5000 START=INDEX*MAXLEN+1
PJ 5010 LENGTH=ASC(STORAGE$(START,START))

GQ 5015 IF LENGTH=0 THEN WORK$="":RETURN
HR 5020 START=START+1
OX 5030 FINISH=START+LENGTH-1
VD 5040 WORK$=STORAGE$(START,FINISH)
AS 5050 RETURN
KZ 5998 REM
MG 5999 REM SUBROUTINE TO PUT STRING
PY 6000 START=INDEX*MAXLEN+1
LD 6010 STORAGE$(START,START)=CHR$(LEN(WO
   RK$))
MV 6015 IF LEN(WORK$)=0 THEN RETURN
HS 6020 START=START+1
NR 6030 FINISH=START+LEN(WORK$)-1
XA 6040 STORAGE$(START,FINISH)=WORK$
AT 6050 RETURN
```

LISTING 2

```
GP 2 REM STRING ARRAY HANDLER #2
ET 4 REM BY RICHARD WHITSELL
OS 6 REM (c)1988, ANTIC PUBLISHING INC.
OP 10 MAXNUM=10:MAXLEN=20
FR 20 DIM STORAGE$(MAXNUM*MAXLEN)
NJ 30 DIM WORK$(MAXLEN)
QY 35 DIM LENARRAY(MAXNUM)
LS 40 GRAPHICS 0
TJ 50 PRINT "ENTER 10 NAMES"
GP 60 FOR INDEX=0 TO MAXNUM-1
ZG 70 INPUT WORK$:GOSUB 6000
NM 80 NEXT INDEX
LX 90 GRAPHICS 0
QU 100 PRINT "NAME",,"LENGTH"
KQ 105 REM =========================
UL 110 FOR INDEX=0 TO MAXNUM-1
SE 120 GOSUB 5000
TW 130 PRINT WORK$,LEN(WORK$)
WG 140 NEXT INDEX
KY 145 REM =========================
OA 150 END
ON 4999 REM SUBROUTINE TO GET STRING
PX 5000 START=INDEX*MAXLEN+1
VV 5010 LENGTH=LENARRAY(INDEX)
GQ 5015 IF LENGTH=0 THEN WORK$="":RETURN
OU 5020 FINISH=START+LENGTH-1
VA 5030 WORK$=STORAGE$(START,FINISH)
AP 5040 RETURN
KZ 5998 REM
MG 5999 REM SUBROUTINE TO PUT STRING
PY 6000 START=INDEX*MAXLEN+1
QO 6010 LENARRAY(INDEX)=LEN(WORK$)
MV 6015 IF LEN(WORK$)=0 THEN RETURN
NO 6020 FINISH=START+LEN(WORK$)-1
WX 6030 STORAGE$(START,FINISH)=WORK$
AQ 6040 RETURN
```

GTIA JOYSTICK PAINTER

Article on page 37

LISTING 1

Don't type the TYPO II Codes!

```
RR 1000 REM GEDIT.BAS
ML 1010 REM BY ROBIN SHERER
UP 1020 REM (c)1987, ANTIC PUBLISHING
IF 1030 REM
NF 1040 BRK=PEEK(53279)<>5
UX 2000 REM ASSEMBLY ROUTINES
VV 2020 DIM WT$(57):REM TDELAY.OBJ
GS 2030 WT$="[illegible]"
IP 2060 REM
CS 2070 DIM FM$(54):REM FILMEM.OBJ
DF 2080 FM$="[illegible]"
IC 2110 REM
BS 2120 DIM MM$(49):REM MOVMEM.OBJ
KA 2130 MM$="[illegible]"
IR 2160 REM
RW 2170 DIM SS$(95):REM SOUNDS.OBJ
FB 2180 SS$="[illegible]"
IK 2230 REM
CJ 2240 DIM CC$(37):REM CIOCTL.OBJ
RM 2250 CC$="[illegible]"
DK 3000 DIM PIC$(7689):PIC$(1)="[illegible]":PIC$(7
   689)=PIC$:PIC$(2)=PIC$
HZ 4000 REM
OT 4010 REM MAILINE
IQ 4020 DIM F$(16),G$(16)
AO 4030 DIM H(10)
RR 4040 GRAPHICS 10:GOSUB 5400
ET 4050 SA=PEEK(88)+PEEK(89)*256
GN 4060 RESTORE
AQ 4070 REM SET UP COLORS
YY 4080 FOR I=704 TO 712
CN 4090 READ B:POKE I,B
EU 4100 NEXT I
UU 4110 DATA 12,0,29,66,71
JJ 4120 DATA 123,156,214,234
DZ 4130 REM DRAW SCREEN
YM 4140 COLOR 1
WB 4150 PLOT 0,0:DRAWTO 79,0
XE 4160 PLOT 0,182:DRAWTO 79,182
BA 4170 FOR I=1 TO 8
IZ 4180 COLOR I:C=(I*10)-1
GP 4190 FOR J=184 TO 188
JK 4200 PLOT C-1,J:DRAWTO C-9,J
FK 4210 NEXT J
FC 4220 NEXT I
JX 4230 C=37:R=90:UC=1:N=1:CI=2:RI=3
RA 4240 REM GET USER INPUT
OX 4250 X=USR(ADR(WT$),40)
NQ 4260 TRAP 5170:POKE 764,255
MK 4270 T=STRIG(0):S=STICK(0)
BW 4280 FOR I=1 TO 9
EJ 4290 H(I)=PEEK(703+I)
EY 4300 NEXT I
YA 4310 K=PEEK(764):IF T=1 THEN 4370
NS 4320 REM PAINT
VJ 4330 FOR I=R-RI TO R
XM 4340 PLOT C,I:DRAWTO C+CI,I
FN 4350 NEXT I
DA 4360 REM FLASH CURSOR
DI 4370 LOCATE C,R,C1
YO 4380 LOCATE C,R-RI,C2
GN 4390 LOCATE C+CI,R-RI,C3
OT 4400 LOCATE C+CI,R,C4
YO 4410 COLOR 0:PLOT C,R
YB 4420 PLOT C,R-RI
YL 4430 PLOT C+CI,R-RI
PA 4440 PLOT C+CI,R
WL 4450 X=USR(ADR(WT$),1)
YY 4460 COLOR 1
WR 4470 X=USR(ADR(WT$),1)
MH 4480 PLOT C,R
YW 4490 PLOT C,R-RI
YE 4500 PLOT C+CI,R-RI
CA 4510 PLOT C+CI,R:POKE 77,0
WE 4520 X=USR(ADR(WT$),1)
DH 4530 COLOR C1:PLOT C,R
HP 4540 COLOR C2:PLOT C,R-RI
TV 4550 COLOR C3:PLOT C+CI,R-RI
TR 4560 COLOR C4:PLOT C+CI,R
MN 4570 COLOR N
US 4580 REM CHECK KEYBOARD
YV 4590 IF K=255 THEN 5190
TV 4595 X=USR(ADR(SS$),0)
QZ 4600 IF K=47 THEN POKE 764,255:END
QL 4610 IF K=42 THEN N=0:GOTO 4250
RN 4620 IF K=118 THEN 4040
YF 4630 IF K<128 THEN 4750
UV 4640 IF K=142 THEN RI=RI+1
XJ 4650 IF K=143 THEN RI=RI-1
YS 4660 IF K=134 THEN CI=CI-1
XK 4670 IF K=135 THEN CI=CI+1
SP 4680 S=1:IF RI<0 THEN RI=0:S=2
OP 4690 IF CI<0 THEN CI=0:S=2
PH 4700 IF RI>20 THEN RI=20:S=2
YR 4710 IF CI>20 THEN CI=20:S=2
UR 4720 X=USR(ADR(SS$),S)
UR 4730 GOTO 5290
EE 4740 REM GET COLOR
VH 4750 IF K<>18 THEN 5010
LO 4760 N=INT((UC+10)/10):COLOR N
ZH 4770 COLOR 1
UU 4780 PLOT UC-1,191:DRAWTO UC+7,191
KV 4790 X=USR(ADR(WT$),40):COLOR W
WH 4800 T=STRIG(0):IF T=0 THEN 4920
QG 4810 S=STICK(0)
ZY 4820 REM COLOR HUE
LZ 4830 IF S<>13 AND S<>14 THEN 4910
YC 4840 A=(N-1)*16
PU 4850 IF S=14 THEN B=PEEK(704+N)+2
RX 4860 IF S=13 THEN B=PEEK(704+N)-2
BL 4870 IF B<0 THEN B=0
LI 4880 IF B>255 THEN B=255
AU 4890 POKE 704+N,B:GOTO 4790
KK 4900 REM COLOR SELECTION
BK 4910 IF S<>7 AND S<>11 THEN 4790
YK 4920 COLOR 0
UJ 4930 PLOT UC-1,191:DRAWTO UC+7,191
MM 4940 COLOR N
GU 4950 IF T=0 THEN 4250
GY 4960 IF S=7 THEN UC=UC+10
KN 4970 IF S=11 THEN UC=UC-10
ZX 4980 IF UC<1 THEN UC=1
YW 4990 IF UC>71 THEN UC=71
UF 5000 GOTO 4760
DQ 5005 REM SAVE SCREEN
EV 5010 IF K<>62 THEN 5095
XM 5020 POKE 764,255:X=USR(ADR(MM$),(PEEK
   (88)+PEEK(89)*256),ADR(PIC$),7680)
ZI 5030 FOR X=704 TO 712:PIC$(6977+X,6977
   +X)=CHR$(PEEK(X)):NEXT X
RM 5040 GRAPHICS 0:GOSUB 5400:? :? "Filen
   ame to SAVE";:INPUT G$:IF LEN(G$)<1 TH
   EN 5080
WM 5050 IF G$(1,1)="D" AND (G$(2,2)=":" O
   R G$(3,3)=":") THEN F$=G$:GOTO 5070
AZ 5060 F$(1,2)="D:":F$(3,LEN(G$)+2)=G$
NC 5070 CLOSE #1:OPEN #1,8,0,F$:? #1;PIC$
   ;:CLOSE #1
TR 5080 POKE 559,0:GRAPHICS 10:GOSUB 5400
   :X=USR(ADR(MM$),ADR(PIC$),(PEEK(88)+PE
   EK(89)*256),7680)
HR 5085 FOR X=704 TO 712:POKE X,ASC(PIC$(
   6977+X,6977+X)):NEXT X:POKE 559,34:GOT
   O 4250
WY 5090 REM LOAD SCREEN
FB 5095 IF K<>0 THEN 5190
XI 5100 POKE 764,255:X=USR(ADR(MM$),(PEEK
   (88)+PEEK(89)*256),ADR(PIC$),7680)
ZE 5110 FOR X=704 TO 712:PIC$(6977+X,6977
   +X)=CHR$(PEEK(X)):NEXT X
PP 5120 GRAPHICS 0:GOSUB 5400:? :? "Filen
   ame to LOAD";:INPUT G$:IF LEN(G$)<1 TH
   EN 5080
QT 5130 IF G$(1,1)="D" AND (G$(2,2)=":" O
   R G$(3,3)=":") THEN F$=G$:GOTO 5140
BM 5135 F$(1,2)="D:":F$(3,LEN(G$)+2)=G$
DO 5140 CLOSE #1:OPEN #1,4,0,F$
DR 5150 GRAPHICS 10:GOSUB 5400:X=USR(ADR(
   CC$),1,7,SA,7680)
ZD 5155 FOR X=704 TO 712:GET #1,Y:POKE X,
   Y:NEXT X
SU 5160 CLOSE #1:GOTO 4250
CG 5170 X=USR(ADR(SS$),3):GOTO 4250
EU 5180 REM CURSOR MOVEMENT
CT 5190 IF S=15 THEN 4270
XE 5200 IF S=14 THEN R=R-RI-1
TF 5210 IF S=13 THEN R=R+RI+1
LR 5220 IF S=11 THEN C=C-CI-1
CZ 5230 IF S=10 THEN R=R-RI-1:C=C-CI-1
EI 5240 IF S=9 THEN R=R+RI+1:C=C-CI-1
```

```
ID 5250 IF S=7 THEN C=C+CI+1
BX 5260 IF S=6 THEN R=R-RI-1:C=C+CI+1
YD 5270 IF S=5 THEN R=R+RI+1:C=C+CI+1
NE 5280 REM CHECK CURSOR LIMITS
CH 5290 IF C<0 THEN C=0
CB 5300 IF C>79-CI THEN C=79-CI
KK 5310 IF R<1+RI THEN R=1+RI
ZF 5320 IF R>181 THEN R=181
SM 5330 GOTO 4260
FJ 5340 END
IG 5400 IF BRK THEN POKE 16,112:POKE 5377
   4,112
AO 5410 RETURN
```

LISTING 2

```
MV 10 REM GEDIT.BAS, LISTING TWO
ZX 20 REM BY ROBIN SHERER
FJ 30 REM (c) 1985,1987 ANTIC PUBLISHING
JW 35 REM (CREATES LINES 2030, 2080, 2130
   , 2180 & 2250)
EV 40 REM (LINES 10-250 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PR 60 DIM FN$(20),TEMP$(20),AR$(93):DPL=P
   EEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
RD 80 ? "Disk or Cassette?";:POKE 764,25
   5
PY 90 IF  NOT (PEEK(764)=18 OR PEEK(764)=
   58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
VB 110 POKE 764,255:GRAPHICS 0:? "      AN
   TIC'S GENERIC BASIC LOADER"
MY 120 ? ,"BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LW 150 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BQ 160 AR$="":READ AR$
YC 170 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DM 180 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")      "
BK 190 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CM 210 IF C<LN+1 THEN ? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FN$="C:" THEN ? :? " Prepare ca
   ssette, press [RETURN]"
AR 230 OPEN #1,8,0,FN$
PV 240 POKE 766,1:? #1;A$;:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0:? "COMPLETED
   "
HO 1000 DATA 352
JF 1010 DATA 050048051048032087084036061
   0341041041702240002400251692551412550
   06138160006162255202208253136
WK 1020 DATA 208248206255006208241170202
   2082311041702240002400181412550061600
   06162255202208253136208248206
FS 1030 DATA 255006208241096034155050048
   0560480320700770360610341041041332051
   04133204104104133206104170224
VC 1040 DATA 000240016160255165206145204
   1362082511452042302052022082401041681
   92000240014165206136192000240
TW 1050 DATA 005145204136208251145204096
   0341550500490510480320770770360610341
   04104133207104133206104133205
AN 1060 DATA 104133204104170224000240018
   1602551772061452041361922552082472302
   07230205202208238104168177206
EX 1070 DATA 145204136192255208247096034
   1550500490560480320830830360610341041
   04104201003240062201002240032
EC 1080 DATA 169020141000210162174142001
   2101690021410280021690002050280022082
   51202202142001210224160208235
EV 1090 DATA 096169040141000210169170141
   0012101690161410280021690002050280022
   08251141001210096169140141000
PC 1100 DATA 210169202141001210169016141
   0280021690002050280022082511410012100
   96034155050005005304803206706 7
DM 1110 DATA 036061034104104104170169000
   0241050162022082501701041041570660031
   04157069003104157068003104157
CX 1120 DATA 073003104157072003076086228
   034155
```

CZ Split

real-time MIDI special effects *Article on page 51*

LISTING 1

A

```
Rem Program CZSPLIT
Rem By Jim Pierson-Perry
Rem (c) 1988 Antic Publishing
Rem
Rem Play up to 4 separate patches at once on the CZ synth
Rem Each patch gets its own play area on the keyboard
Rem
Hidem
Option Base 0
Dim Vprg(3),Sp%(3)
Begin_program:
Rem initialize split point and patch number arrays
For I%=0 To 3
  Sp%(I%)=36
  Vprg(I%)=0
Next I%
Cls
Rem Get CZ MIDI channel for sending
Do
  Input "Enter MIDI base channel (1-13) ";Mc%
  @Check_range(1,13,Mc%)
```

B

```
  Exit If In_range%
Loop
Mc%=Mc%-1
Rem Identify brand of CZ synth for use in selecting patch programs
Print
Print "What is your brand of CZ synth:"
Print Spc(3);"1 = CZ-101/1000"
Print Spc(3);"2 = CZ-3000/5000"
Print Spc(3);"3 = Other (CZ-230S/CZ-1)"
Do
  Input "What is your brand (1, 2, or 3) ";Czt%
  @Check_range(1,3,Czt%)
  Exit If In_range%
Loop
Cls
Rem Set up keyboard areas for patches: patch 1 goes from left end to
Rem split point #1, patch 2 goes from split point #1 to #2, etc.
Do
  Input "Enter # of split points (1-3) ";Nsplit%
  @Check_range(1,3,Nsplit%)
  Exit If In_range%
```

continued on next page

C

```
Loop
For I%=1 To Nsplit%
  Do
    Print Spc(3);"Enter MIDI key value (36-96) for split point #";I%;
    Input Sp%(I%-1)
    @Check_range(36,96,Sp%(I%-1))
    Exit If In_range%
  Loop
Next I%
Cls
Rem Chose patches for the keyboard areas
Rem If cartridge selected as bank and it is not present, the default bank
Rem is the corresponding Preset patch
For I%=0 To Nsplit%
  Print "Enter voice selection for keyboard zone ";I%+1
  If Czt%=1 Then
    Do
      Print Spc(3);"Bank (Preset=1, Internal=2, Cartridge=3) = ";
      Input B%
      @Check_range(1,3,B%)
      Exit If In_range%
    Loop
    Do
      Print Spc(3);"Program Number (1-16) = ";
      Input T%
      @Check_range(1,16,T%)
      Exit If In_range%
    Loop
    Goto Dun
  Endif
  If Czt%=2 Then
    Do
      Print Spc(3);"Source (Preset=1, Memory=2) = ";
      Input B%
      @Check_range(1,2,B%)
      Exit If In_range%
    Loop
    Do
      Print Spc(3);"Bank (A=1, B=2, C=3, D=4) = ";
      Input S%
      @Check_range(1,4,S%)
      Exit If In_range%
    Loop
    Do
      Print Spc(3);"Program Number (1-8) = ";
      Input T%
      @Check_range(1,8,T%)
      Exit If In_range%
    Loop
    T%=8*(S%-1)+T%
    Goto Dun
  Endif
  B%=1
  Print Spc(3);"Program # = ";
  Input T%
  Dun:
  Print
  Vprg(I%)=32*(B%-1)+T%-1
Next I%
Sp1%=Sp%(0)
Sp2%=Sp%(1)
Sp3%=Sp%(2)
Rem Subroutine to set up mono playing mode for CZ
Gosub Monoset(Mc%,Nsplit%,Vprg)
Cls
```

D

```
Print "CZ setup complete - ready to play."
Print "Press PORTMENTO ON/OFF button on CZ to end program"
Rem Real-time MIDI data processing section
A:
Rem Get current MIDI byte
B%=Inp(3)
B:
Rem If it is Portamento button on/off then branch to exit
If B%=176+Mc% Then
  Goto X
Endif
Rem Test for note on command
If B%<>144+Mc% Then
  Rem Not a note on - pass it straight through to CZ
  Out 3,B%
  Goto A
Else
  Rem Note on processing section
  Rem Get following MIDI key data byte (tells what note was pressed)
  T%=Inp(3)
  C:
  Rem Determine what keyboard area the note was in and set up for the
  Rem corresponding patch to sound
  If T%=>Sp1% Then
    Out 3,144+Mc%
    Goto D
  Endif
  If T%=>Sp2% Then
    Out 3,145+Mc%
    Goto D
  Endif
  If T%=>Sp3% Then
    Out 3,146+Mc%
    Goto D
  Endif
  Out 3,147+Mc%
  D:
  Rem Send the note on MIDI key data byte to the CZ
  Out 3,T%
  Rem Get the note on velocity data byte
  T%=Inp(3)
  Rem And send it right back to the CZ
  Out 3,T%
  Rem Test next MIDI byte for command byte or another note on data pair
  T%=Inp(3)
  If T%<128 Then
    Rem It was another note on event
    Goto C
  Else
    Rem It was a new command byte
    B%=T%
    Goto B
  Endif
Endif
X:
Rem Exit gracefully - first clear out the MIDI pipeline
While Inp?(3)<>0
  T%=Inp(3)
Wend
Rem Return Local control to the CZ keyboard
Out 3,176+Mc%
Out 3,122
Out 3,127
Rem Reset the Portamento on/off button
Out 3,176+Mc%
```

E

```
Out 3,65
Out 3,0
Rem Return CZ to poly playing mode
Out 3,176+Mc%
Out 3,127
Out 3,0
Rem See if user wants to run program again
Print
Input "Would you like to start again (N to exit)";A$
If Left$(A$,1)="N" Or Left$(A$,1)="n"
  Showm
  Edit
Endif
Goto Begin_program
Rem Procedure to set up CZ in N+1 separate monophonic voices
Rem (Max # of voices is 4)
Procedure Monoset(Mc%,N%,Vprg)
  Rem Mc = base MIDI channel that CZ receives on
  Rem N = # of voices - 1
  Rem Vprg = array with patch ID program values for the N+1 voices
  Rem
  Rem First turn off local keyboard control, all notes will now
  Rem come solely from MIDI in to the CZ
```

F

```
  Out 3,176+Mc%
  Out 3,122
  Out 3,0
  Rem Set CZ to Mono mode
  Out 3,176+Mc%
  Out 3,126
  Out 3,4
  Rem Set the N+1 patches for MIDI channels Mc thru Mc+N
  For I=0 To N%
    Out 3,192+Mc%+I
    Out 3,Vprg(I)
  Next I
  Rem Clear out the MIDI pipeline before starting to play
  While Inp?(3)<>0
    B%=Inp(3)
  Wend
Return
Procedure Check_range(Lo%,Hi%,Number%)
  In_range%=(Number%>=Lo%) And (Number%<=Hi%)
  If Not In_range%
    Print "Please enter a number in the correct range."
  Endif
Return
```

CZ Overlay real-time MIDI special effects

Article on page 51

LISTING 2

A

```
Rem Program CZOVERLY
Rem By Jim Pierson-Perry
Rem (C) 1988 Antic Publishing
Rem
Rem Overlay up to 4 separate mono voices on the CZ (1 base + 3 overlays)
Rem Each of the overlay voices can be offset up/down the scale from
Rem the base voice (e.g. play oactave or fifth apart)
Rem
Hidem
Option Base 0
Dim Vprg(3),Ov(3)
Begin_program:
Rem Initialize overlay offset and patch number arrays
For I=0 To 3
  Ov(I)=0
  Vprg(I)=0
Next I
Cls
Rem Get CZ MIDI channel for sending
Do
  Input "Enter MIDI base channel (1-13) ";Mc%
  @Check_range(1,13,Mc%)
  Exit If In_range%
Loop
Mc%=Mc%-1
Rem Identify brand of CZ synth for use in selecting patch programs
Print
Print "What is your brand of CZ synth:"
Print Spc(3);"1 = CZ-101/1000"
Print Spc(3);"2 = CZ-3000/5000"
Print Spc(3);"3 = Other (CZ-230S/CZ-1)"
Do
  Input "What is your brand (1, 2, or 3) ";Czt%
  @Check_range(1,3,Czt%)
  Exit If In_range%
Loop
```

B

```
Cls
Rem Get number of overlay voices, their offset (in MIDI key terms) from
Rem the base voice and their associated patch program numbers
Do
  Input "Enter # of overlay voices (1-3) ";Nover%
  @Check_range(1,3,Nover%)
  Exit If In_range%
Loop
For I=1 To Nover%
  Print Spc(3);"Enter MIDI key offset for overlay voice #";I;
  Input Ov(I)
Next I
Cls
For I=0 To Nover%
  Print "Enter selection for voice #";I+1
  If Czt%=1 Then
    Do
      Print Spc(3);"Source (Preset=1, Internal=2, Cartridge=3) = ";
      Input B%
      @Check_range(1,3,B%)
      Exit If In_range%
    Loop
    Do
      Print Spc(3);"Program Number (1-16) = ";
      Input T%
      @Check_range(1,16,T%)
      Exit If In_range%
    Loop
    Goto Dun
  Endif
  If Czt%=2 Then
    Do
      Print Spc(3);"Source (Preset=1, Memory=2) = ";
      Input B%
      @Check_range(1,3,B%)
```

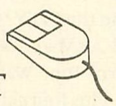
continued on next page

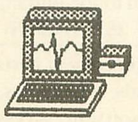
C

```
      Exit If In_range%
    Loop
    Do
      Print Spc(3);"Bank (A=1, B=2, C=3, D=4) = ";
      Input S%
      @Check_range(1,4,S%)
      Exit If In_range%
    Loop
    Do
      Print Spc(3);"Program Number (1-8) = ";
      Input T%
      @Check_range(1,8,T%)
      Exit If In_range%
    Loop
    T%=8*(S%-1)+T%
    Goto Dun
  Endif
  B%=1
  Print Spc(3);"Program # = ";
  Input T%
  Dun:
  Print
  Vprg(I)=32*(B%-1)+T%-1
Next I
Rem Subroutine to set up mono playing mode for the CZ
Gosub Monoset(Mc%,Nover%,Vprg)
Cls
Print "CZ setup complete - ready to play."
Print "Press PORTMENTO ON/OFF button on CZ to end program"
Rem Real-time MIDI data processing section
A:
Rem Get current MIDI byte
B%=Inp(3)
B:
Rem If it is Portamento button on/off then branch to exit
If B%=176+Mc% Then
  Goto X
Endif
Rem Test for note on command
If B%<>144+Mc% Then
  Rem Not a note on - pass it straight through to CZ
  Out 3,B%
  Goto A
Else
  Rem Note on processing section
  Rem Get the following MIDI key data byte (tells what note was pressed)
  T%=Inp(3)
  C:
  Rem Get the note on velocity data byte
  V%=Inp(3)
  Rem Turn on the base and overlay voices
  For I=0 To Nover%
    Out 3,144+Mc%+I
    Rem For each voice add the offset to the note on key data byte
    Out 3,T%+Ov(I)
    Out 3,V%
  Next I
  Rem Test next MIDI byte for command byte or another note on data pair
  T%=Inp(3)
  If T%<128 Then
    Rem It was another note on event
    Goto C
```

D

```
  Else
    Rem It was a new command byte
    B%=T%
    Goto B
  Endif
Endif
X:
Rem Exit gracefully - first clear out the MIDI pipeline
While Inp?(3)<>0
  T%=Inp(3)
Wend
Rem Return Local control to the CZ keyboard
Out 3,176+Mc%
Out 3,122
Out 3,127
Rem Reset the Portamento on/off button
Out 3,176+Mc%
Out 3,65
Out 3,0
Rem Return CZ to poly playing mode
Out 3,176+Mc%
Out 3,127
Out 3,0
Rem Find out if user wants to run program again
Input "Would you like to start over (N to exit)";A$
If Left$(A$,1)="N" Or Left$(A$,1)="n"
  Showm
  Edit
Endif
Goto Begin_program
Rem Procedure to set up CZ in N+1 separate monophonic voices
Rem (Max # of voices is 4)
Procedure Monoset(Mc%,N%,Vprg)
  Rem Mc = base MIDI channel that CZ receives on
  Rem N = # of voices - 1
  Rem Vprg = array with patch ID program values for the N+1 voices
  Rem
  Rem First turn off local keyboard control, all notes will now
  Rem come solely from MIDI in to the CZ
  Out 3,176+Mc%
  Out 3,122
  Out 3,0
  Rem Set CZ to mono mode
  Out 3,176+Mc%
  Out 3,126
  Out 3,4
  Rem Set the N+1 patches for MIDI channels Mc thru Mc+N
  For I=0 To N%
    Out 3,192+Mc%+I
    Out 3,Vprg(I)
  Next I
  Rem Clear out the MIDI pipeline before starting to play
  While Inp?(3)<>0
    B%=Inp(3)
  Wend
Return
Procedure Check_range(Lo%,Hi%,Number%)
  In_range%=(Number%>=Lo%) And (Number%<=Hi%)
  If Not In_range%
    Print "Please enter a number in the correct range."
  Endif
Return
```





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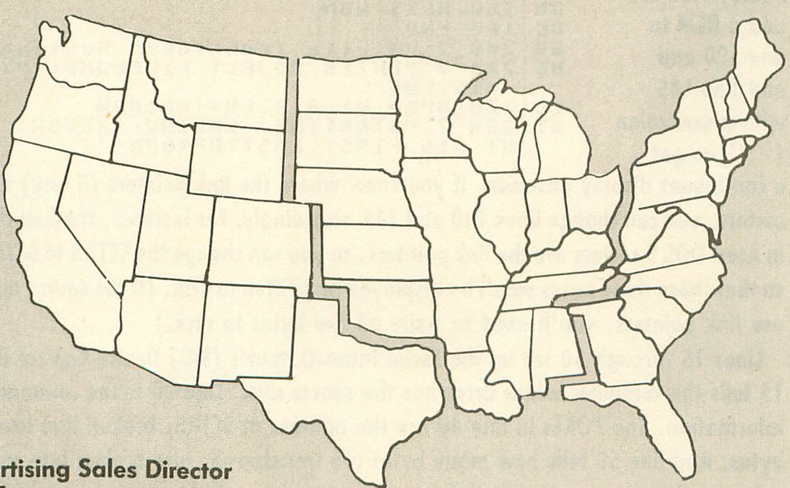

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Tech Tips

By CHARLES JACKSON, *Antic Technical Editor*

> ***Antic** pays $25 for every original and exclusive Tech Tip submission that we publish. Send your 8-bit or ST disk and printout to: Antic Tech Tips, 544 Second Street, San Francisco, CA 94107. Tech Tips welcomes very short programs that demonstrate the Atari's powers, simple hardware modifications, or useful macros for popular software.*

MAKE A MEM.SAV

A MEM.SAV file on your DOS disk can be extremely useful, especially if you're using the 130XE RAMdisk. You can work on your program, go to DOS for whatever reason, return to BASIC, and voila*—your program has remained in memory.*

But what if your disk doesn't *have a MEM.SAV? You could do one of two things: SAVE the file you're working on using whatever filename you like, use DOS, then reLOAD the file upon your return to BASIC;* or*—and this is even simpler—type the following line in immediate mode (that is, without a line number): OPEN #1,8,0,"D1:MEM.SAV":END*

When you type DOS from BASIC, your Atari loads DUP.SYS into memory. In the process, it overwrites about 6K of the memory area that holds your BASIC program. A MEM.SAV file —if you have one on your disk— prevents this.

The part of your program that would normally be displaced by DUP.SYS is saved automatically in a file called MEM.SAV. Once DOS has copied your program into MEM.SAV, the DOS menu will appear. (Note that some Copy functions will not work when you're using a MEM.SAV.)

When you're through, DOS will use the MEM.SAV file to restore your BASIC program to your previous state when you return to BASIC.

DOS 2 TRANSFUSION

Once in a while, somebody sends Antic an article on a disk which uses an operating system other than DOS 2.0S or 2.5. (*Please don't.*—ANTIC ED) We cannot read these submissions without a conversion utility or some other programming acrobatics.

In order to use a recent review sent on a DOS 4 disk, we came up with this "quick-and-dirty" program that reads a user-specified range of sectors from one disk (any DOS), converts the contents of each sector into a 128-byte string, displays the string, then stores it in a DOS 2.0S disk file.

This program needs two disk drives, or one physical drive and one RAMdisk. It does *not* transfer *files*, or even *sectors*, but, rather, 128-byte chunks of information. The program works with files in any format: Letter Perfect, Write 80, even DOS 3.

Don't type the TYPO II Codes!

```
OH 1 DIM SCTR$(128),FN$(15)
OD 5 GOSUB 200
VI 6 GOSUB 300:FOR NUM=FIRST TO LAST:SCTR
   $(1)="■":SCTR$(128)=SCTR$:SCTR$(2)=SCT
   R$
TG 8 AD=ADR(SCTR$):ADHI=INT(AD/256):ADLO=
   AD-(ADHI*256)
VC 10 REM READ A SECTOR INTO A STRING
ZS 15 POKE 769,1:REM  DISK # 
ZC 20 POKE 770,82:REM  READ SECTOR 
LD 30 POKE 771,64:REM  RECEIVE DATA 
SM 40 POKE 772,ADLO:POKE 773,ADHI:REM  AD
   DRESS OF STRING 
OV 50 POKE 776,128:POKE 777,0:REM  # OF 
   BYTES 
JW 60 POKE 766,1:REM DISPLAY CTRL CODES
LE 100 ? "SECTOR #";NUM
IZ 110 NUMHI=INT(NUM/256):NUMLO=NUM-(NUMH
   I*256)
BU 120 POKE 778,NUMLO:POKE 779,NUMHI
NF 130 JNK=USR(ADR("h S■■"))
JJ 135 REM (ASCII equivalents for the abo
   ve string are: 104, 32, 83, 228, 96)
OG 140 ? #1;SCTR$;
ZG 145 ? SCTR$
BM 150 NEXT NUM
OC 160 END
QV 200 ? "■ File Transfuser Routine■■"
HE 210 ? "ENTER OBJECT FILENAME: ";:INPUT
    #16,FN$
LL 220 OPEN #1,8,0,FN$:RETURN
BI 300 ? "STARTING, ENDING SECTOR: ";:INP
   UT #16,FIRST,LAST:RETURN
```

The DOS 2 Transfusion program is quite flexible. You can add a REM statement to lines 5 and 140, for instance, to get just a screen display (or you can just enter "S:" as the DOS 2 filename). You can add a REM to line 100 and end line 145 with a semicolon (";") to get a continuous display onscreen. If you know where the link pointers (if any) are in your sectors, you can change lines 140 and 145 accordingly. For instance, the last three bytes in Atari DOS 2 sectors are the link pointers, so you can change the SCTR$ to SCTR$(1,125) so that those three bytes won't be displayed or written to disk. (If the source disk doesn't use link pointers, you'll need to write all the bytes to disk.)

Lines 15 through 50 set up the Serial Input/Output's (SIO) Device Control Block. Line 15 tells the computer which drive has the source disk. Line 20 is the command to read information. The POKEs in line 40 are the address of SCTR$, broken into low and high bytes. And line 50 tells how many bytes are transferred, also broken into Lo/Hi bytes.

Again, this program isn't built for just one disk drive. Perhaps, however, *you* can figure a way to do it and publish the result in Tech Tips. (Hint: use buffered I/O.)

DOS 2 Transfusion isn't really a program per se, but rather a *routine* that can be used in many different settings. How you use it is up to you. (*See* ABC's of Atari computers *by David Mentley (Datamost Press) and* Mapping the Atari *by Ian Chadwick (Compute! Publications) for more information on these routines.*—ANTIC ED)

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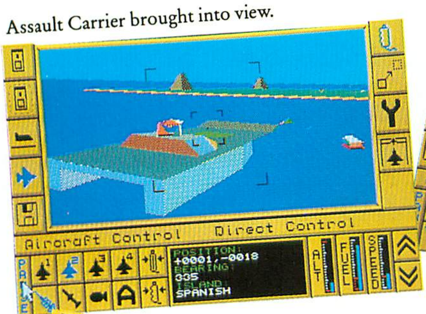
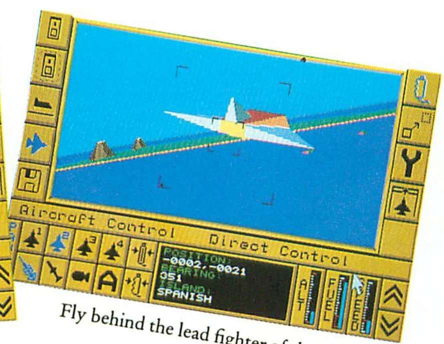
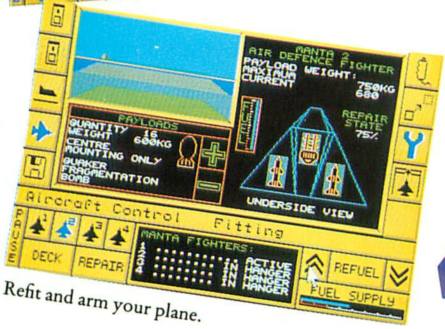
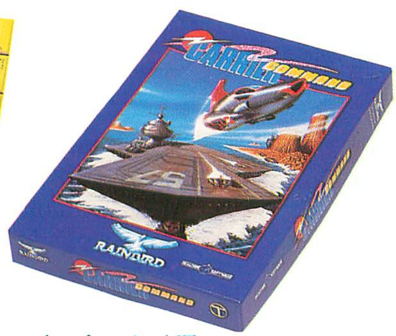




Fly behind the lead fighter of the squadron.



Refit and arm your plane.



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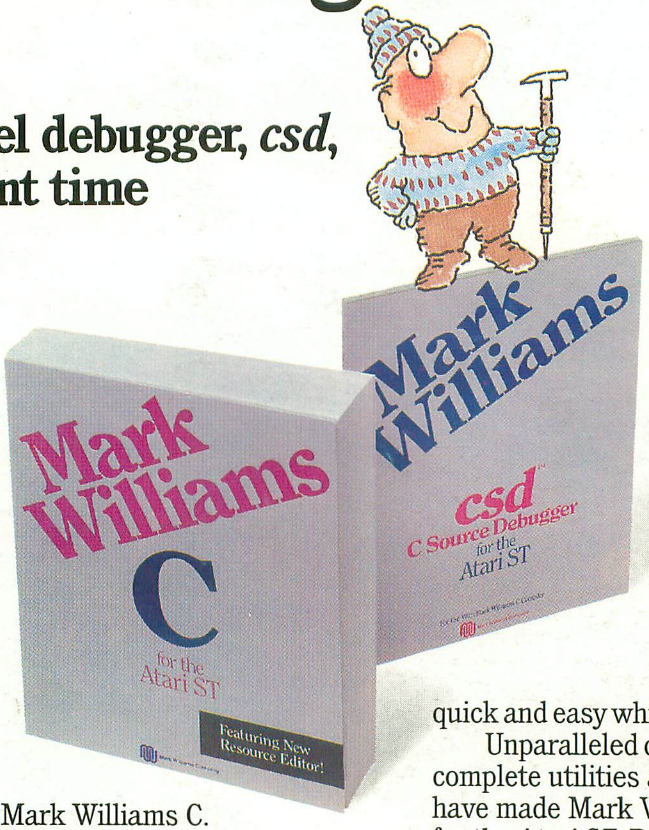

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